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MINNESOTA MEDICINE

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VOL. XIII

JULY, 1930

No. 7

LORD LISTER*

E. P. QUAIN, M.D.
Bismarck, North Dakota

MANY speeches have been made and books written for the purpose of calling attention to Lister's monumental addition to the structure we call modern civilization. His life, his character, and his grand gift to the human race have been described repeatedly and well. The object of this contribution, therefore, is not to add any new glory to this man, or his work. It is but a humble effort of asking the brethren to pause for a few moments in appreciative contemplation of the evangelist who first taught the world methods of overcoming the demon, SEPSIS, and who pointed out the way along which we are progressing, slowly and stumblingly, but progressing, to better and happier lives.

A medical historian, a few years ago, said that surgery is divided into two periods, first, the period before Lister, and second, the period after Lister. It will not be necessary for us to say anything about this second period or era in surgery. We have this around us all the time; it is a present-day reality through which we are plodding every day.

The period before Lister, however, was so radically different from the surgery with which we are familiar, that we might find it difficult even to recognize it as surgery. In former days only a very small number of our anatomic structures were admissible for surgical intervention. Most of the known diseases and injuries were left, for better or worse, to the tender mercies of the physician. The abdominal cavity was rarely touched by the surgeon and there was a good reason, for half or more of those who had their peritoneal cavities inspected, promptly died. In the thorax the only lesion treated surgically was empyema, which occasionally was punctured

and opened before spontaneous rupture through the skin took place.

In the pre-Listerian age, major surgery was largely confined to amputations. This was a larger surgical field in the past than it is now for nearly all compound fractures required amputation. It was found that the patient had a better chance for life when the limb was amputated than he had when he retained the member and experienced fever, chills and pyemia which almost invariably followed open fractures.

The mortality records from various hospitals and surgeons about the beginning of the past century show that from 30 per cent to 50 per cent of all amputations were followed by death. In 1850 certain surgeons in Vienna and Paris were justly proud of their results after amputations, because they were able to report that only 25 per cent of their patients died. Military records made during the Napoleonic wars show that the amputation mortality among the wounded varied from 70 to 90 per cent.

The chief causes of these fatalities among postoperative patients were erysipelas, septicemia, pyemia, tetanus, and hospital gangrene. Epidemics of one or the other of these diseases occurred frequently among surgical patients in the hospitals. To our more enlightened minds, it is no wonder that these conditions prevailed when we learn that neither patient nor surgeon before operation was subjected to any other application of soap and water than that required for the sake of social propriety.

The instruments used in a major operation such as the amputation of a leg, were five or six artery forceps, a pair of scissors, and one or two long knives. These clumsy tools were probably washed or at least wiped off carefully after each operation, but had no other treatment than hon-

*Read at the Staff Meeting of the Bismarck Hospital, April 16, 1930.

ing of the knives before operation. Surgical dressings were made of discarded rags. It was the function of the Ladies' Aid Society from each hospital circle to search their wardrobes, garrets and cellars for cast-off garments and articles made of absorptive materials, tear them into suitable sizes, and bring them to the operating and dressing rooms of the hospital. In fairness it should be stated that the articles mentioned were usually if not always washed before they were brought to the hospital and used on the patient.

Many surgeons disdained the practice of certain other members of the profession of turning up their coat sleeves before operating. A few blood spots on the coat was *prima facie* evidence to the public that they beheld a busy surgeon. The same coat was sometimes worn until the sleeves were stiffened from dried blood clots. When the surgeon made his rounds in the hospital for the purpose of dressing his patients, he carried, hanging from a buttonhole, a wisp of ligatures—silk or linen, drawn through wax—in order to have them convenient for the control of postoperative hemorrhage. This complication was of frequent occurrence because the fifteen or twenty ligatures which had been left hanging out of the wound at the time of operation, often required traction for their removal.

The surgeon was anxious to do autopsies, then, as he is now, and he often interrupted his wound treatments and operations by doing postmortem examinations. We can readily understand, therefore, the close relation that existed between the operating table and the autopsy table.

Medical and surgical patients were not separated in the hospitals. Each patient, no matter what his ailment might be, was placed in the bed most readily available, thus mixing medical with surgical, and infectious with non-infectious patients without knowledge of the consequences. However, the surgeon had no difficulty in finding his own patients in the ward owing to the foul stench of putrefying flesh which always surrounded the surgical beds.

Surgical nursing as we understand it did not exist. The female attendants in the operating rooms and wards were handicapped, not only by ignorance, but by the old-time prudery which made it improper for a woman to expose the skin of her bared arms. Presumably, if one of the old dames of the Victorian Age could arise and

take a glance into one of our modern operating rooms, she would promptly have a stroke of apoplexy and return to her grave.

The suppuration of wounds was spoken of as putrefaction and decomposition. It was believed that the underlying cause was the irritating influence of the oxygen in the air. Efforts were therefore made to exclude the air from the wounds by various forms of tight dressings, a practice which made matters worse and not better.

Surgical operations were practiced in prehistoric times and surgery occasionally had periods of remarkable development. Each period represented the existence of some one great physician, leader, teacher, and master who had exceptional powers of observation and clinical judgment, and gathered a group of disciples about him. After a generation or two the art would fall by the wayside and be forgotten again for a few hundred years, or until the arrival of another man of genius. The histories of Babylonia, Egypt, and Greece prove this statement. Even toward the end of the Eighteenth Century surgery was limited to small procedures, such as we usually include under the term of minor surgery. This was done as a rule not by the physicians of that day, but was practiced by barbers and others who had become adepts at opening boils, setting fractures, and removing foreign bodies which were easily accessible.

In the Nineteenth Century, knowledge increased so rapidly that it was necessary to differentiate its various branches. We may say that science, *i. e.*, classified knowledge, dates back to about the middle of the past century. Chemistry was early an advanced science. Among other chemical compounds developed about that time were carbolic acid, ether, and chloroform—all powerful drugs destined soon to become the most active agents in revolutionizing the healing art. Since it was thought that chemical reactions had so much to do with putrefaction in wounds, chemically trained minds became especially interested in this subject. The first reference to living microorganisms was made by Heister in 1857. He arrived at his conclusions purely by logical reasoning, for he had no means of proving the existence of living germs. He even went so far as to state: "No germs, no pus."

Semmelweis, an obstetrician in Vienna and later in Budapest, in 1865 had noted that the

mortality of mothers after delivery was 10 per cent when delivered by physicians, but only 3 per cent when attended solely by midwives. On the theory that physicians carried living infection from one patient to another, he carried out a number of investigations and inaugurated an obstetrical practice based on scrupulous cleanliness. This was followed by unbelievably brilliant results. Unfortunately, Semmelweiss with all his genius lacked the ability to convince his confrères and the rest of the world of his golden discovery. He was downed in his tracks, figuratively speaking, by critics and unkind satirists. His great idea was not appreciated fully until after his death. Honors commemorating his work have been heaped upon his memory although but few came to him while he lived.

For some inexplicable reason, the path of medical progress has always been strewn with obstacles and obstructions placed there ignorantly and viciously by those who should have been most vitally interested in making this path smooth. Those men who have made the most far-reaching discoveries have practically all gone through agonizing periods of criticisms, jealousies, and cynical and malicious attacks from members of their own profession. One can hardly find another walk in life where opposition to progress has been similarly maintained by those who should have known better.

The same opposition met Pasteur and hampered him for years in his endeavors to convince the world of his discoveries. The proofs he adduced were at first scorned by the medical profession but accepted early by chemists and botanists. His discovery and proof that bacteria cause infection and disease was also made about the middle of the past century.

Then came Lister. Joseph Lister was born at Upton, Essex, England, April 5, 1827. His father was a merchant of education and means who, for amusement, dabbled with problems in chemistry and physics. As one result of these hobbies, he made a decided improvement in the construction of the magnifying glass. From a toy he made it into a powerful engine for the investigation of the minute structures of animal and vegetable tissues. His son Joseph was a studious boy and with his father's magnifying glass began at an early age to study the histology of animal tissues. He devised a special knife with which he could cut slices of tissue much thinner

than had formerly been done. While still a small schoolboy, he experimented with frogs in an attempt to learn why and how frogs changed their color, depending on the degree of light or darkness in which they lived. For this purpose he blinded frogs and exposed part of their bodies to sunlight while keeping other parts in complete darkness. He found that frightening the frog would cause it to change color. The sciatic nerve was cut to determine whether this nerve connection controlled the color change in the frog's foot. At the same time he watched the circulation in the frog's webbed foot with his magnifying glass and found that irritating, or, as we know now, infecting, the web would produce congestion and thrombosis. These examples are given as a few of many to show that this man was born with an insatiable thirst for knowledge through research.

He was given a thorough classical education to which was added a serviceable knowledge of French and German. He graduated in medicine from London University in 1852. While a student he had the opportunity of seeing the first operation ever made under chloroform anesthesia.

After graduation he was an assistant to Prof. Syme of Edinburgh for a time, after which he was made clinical professor in the Medical College of Glasgow, where he remained until 1869. It was here he carried out his investigations resulting in the revolutionary changes of wound treatment. From Prof. Syme he had learned the great value of cleanliness in treating wounds. When he first came to Glasgow he was horrified by the deplorable hospital conditions and the high mortality among the surgical patients. He immediately set about to make those radical improvements in wound treatments which were destined soon to become copied by surgeons all over the world.

Convinced almost from the beginning of his practice that there was something besides the oxygen in the air which brought about putrefaction in wounds, he tried by numerous experiments to learn the true cause. Among the various chemicals employed in wound treatment, he found that carbolic acid was more useful than any other drug to promote healing. At first he applied it to the wound surfaces and in the dressings in the form of a 5 per cent paste. This was at once followed by a marked improvement in

the healing process and encouraged him to carry out still more experiments. The carbolic acid treatment was first used by him in 1865. The result of the treatment was welcomed first because of the reduction of the obnoxious odor about the surgical patients and later because of the very marked improvement in mortality. When the carbolic acid paste was applied to amputated stumps, about four patients out of five recovered and, more important, wounds with compound fractures would frequently heal without suppuration under this treatment and amputation be avoided. This was a startling upset of former conditions and convictions.

While Lister was still further experimenting and using his paste, someone told him of Pasteur's discoveries. Lister called on Pasteur and together the two went over the questions of fermentation, putrefaction and infection. Lister was big enough to recognize the value of Pasteur's work and to give him full credit for his accomplishments. He promptly adopted the new discoveries for practical surgical use. Lister and Pasteur became close friends as proved by their several meetings and the volume of correspondence remaining after them.

On his return home, Lister began to use a spray of a 2.5 per cent carbolic acid solution with the idea of killing the germs floating around in the air about the surgeon and the operative field. This apparatus was at first worked by hand but later more elaborate machinery was constructed and the pump and spray were operated by steam power. The older surgeons, smug in their time-honored convictions, wasted much ink in their vain efforts to ruin this "donkey engine" as it was called, by throwing monkey wrenches of satire among its gears.

The spray was continued throughout every operation, producing a foggy atmosphere about the operating table. The surgeon's finger often became blanched and numb from the acid. The irritating effect on nostrils, eyes, and bronchi was a most distressing feature to surgeon, assistants, and patient.

There was a still further improvement, and a marked improvement, in the results of wound treatment following the introduction of the carbolic acid spray. Lister now began to do more deliberate surgery by performing operations on bones for deformities, by opening joint cavities, and even risking incisions into parts of the body

which heretofore had never been entered successfully in the living.

From descriptions of Lister's antiseptic surgical technic, we gather the following: The instruments were soaked in a 5 per cent carbolic acid watery solution for one-half hour before operation; the sponges, which were of the ordinary soft elastic bathroom variety, were also soaked in a 5 per cent solution. The skin was washed with the same strength while the patient was being anesthetized with chloroform. The surgeon removed his coat and rolled up his shirt sleeves and pinned a towel across his vest. These also were radical innovations. He washed his hands in the 2.5 per cent carbolic solution. The silver, silk, and silkworm-gut sutures were all soaked in the 2.5 per cent preparation. After operation the wound was rinsed with the same solution before closing and the dressings were steeped in the same strength before being applied to the wound. Somewhat late in his experience he discovered the use of catgut for ligation purposes and adopted cheesecloth and gauze for dressings.

Lister was an original thinker and a constant searcher after more facts. He studied carefully every new reaction in his experiments and every phase of the newly discovered laws of tissue damage and tissue repair. While his surgical technic perhaps would be considered mediocre by our present standards, it should be remembered that he was the pioneer and the pathfinder dominated by the daring courage of his convictions and that he blazed roughly the trail for those who came later with finer tools and nicer methods.

Many instruments and apparatus for bacteriological and surgical uses were devised by Lister. There are instruments first produced by him which are useful even today in operations on urethra, bladder, bones, and ear drums. Bloodless operations by means of the tourniquet were practiced by Lister several years before Esmarch produced his elastic bandage. The use of rubber tubes for drainage was another of Lister's innovations.

His success grew by leaps and bounds and his reputation as a surgeon did likewise. From Glasgow he returned to Edinburgh after a few years to become professor of surgery at the University, a position he held until 1878. His assistants and students were enthusiastic followers of this new system of surgery and spread his gos-

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pel wherever they went. However, the opposition to him was so strong in England that antiseptic surgery was adopted all over the European continent and in the United States before the London surgeons would acknowledge its merits. Germany became the place of greatest development for the new surgical practice. One reason for this was the high standard of medical education set early by German educators, and the other reason was that animal experimentation and the study of bacteriology advanced more rapidly in Germany than in any other country. Indeed Lister's opponents in London were able to pass an antivivisection law which hampered the study of bacteriology and kindred subjects in Great Britain for a long time. In a letter written by Lister to Queen Victoria on this subject he said, "Without experiments on lower animals I could not possibly have made the advances in surgery which I have been privileged to inaugurate."

To the German surgeons much credit must be given for adopting so early and so enthusiastically Lister's teachings and for developing during the Eighties another radical advance in the art—aseptic surgery. The stolid London surgeons were obliged to learn later the technical steps of modern aseptic surgery from Germany. This was a galling experience in view of their unkind treatment of antiseptic surgery in the first place and because of their previous statements that more cleanliness in surgery was probably necessary among the Germans because they, in comparison with the British, "are such a dirty people."

Lister continued using his "donkey engine" spray until 1887, after he had become thoroughly convinced of the superiority of the aseptic technique as an improvement over his antiseptic practice. He described with keen surprise and satisfaction his first operation with "boiled" instruments. It was nothing more than the excision of a lipoma from a shoulder but the fact that the wound healed without even a tinge of redness about the stitches was a marvelous historical event to the discerning mind of Lister. He nevertheless used "boiled" instruments only tentatively and in minor operations for some time before his final conviction caused him to bid farewell forever to the world-famed "donkey engine."

But the day of triumph came to Lister as it had come, eventually, to Pasteur. In 1887 Lister was called to London as Professor of Sur-

gery at King's College Hospital, a position he held for six years, or until his retirement. After his fame had become established in London, he enjoyed a constant stream of visitors of surgical students and admirers from Great Britain and from many foreign countries. Among these, because of their prominence in surgery not only in their time but for all time, may be mentioned Thiersch, Volkmann, Bardeleben, Mikulicz, Trendelenburg, Kocher, Bergman, and Lucas-Champonniere.

In 1878, on a visit to his friend Pasteur in Paris, Lister was given unexpectedly a public demonstration which quite overwhelmed him, for he was a man of quiet, unassuming and humble nature, quite befitting his innate greatness. At a medical congress in Amsterdam he was given a special reception and an ovation from representatives of many nations. Prof. Virchow was the speaker of the day. In 1880 Lister was made a knight and in 1903 he became a peer and therefore a member of the Upper House in Parliament. He was given numerous decorations by Royalties of his own and other countries. In 1907 on his eightieth birthday anniversary, Lister celebrations took place not only in London, where it was said that there was a solid line of messenger boys with congratulatory missives on his doorstep from sunrise to sunset, but there were special celebrations in many foreign capitals. In 1909 his eyesight and hearing began to fail but his mental powers and his keen interests in life continued until the last year of his life. He died February 10, 1912.

The British government wished to bury his body in Westminster Abbey, but owing to a clause in his will, he was buried near his birthplace. However, the funeral rites took place in the Abbey, on which solemn occasion there were gathered princes, statesmen, dignitaries, and representatives from scientific bodies from many lands.

It is hard to realize that there are many people still living who remember the pre-Listerian times. There are many doctors still living who began their practice of medicine before the term asepsis was first conceived. We have lived at the very beginning of this new era and we have enjoyed life under the magnificent heritage given us by the two benefactors of mankind—Pasteur and Lister. No greater gifts were ever given by man to man than those given us through the ge-

nius and inspiration of these two men. As a result of their lives and labors, the average span of human life has been lengthened twelve years and more, not to mention our ability to make existence much more tolerable, pleasant and profitable for ourselves and for our successors. Great movements, national, religious, scientific, and economic, were originated by many men before Pasteur and Lister, but none of those movements have rendered as far-reaching service to all men in all nations as the practical application of the knowledge of bacteria has done. Those of us who know that we would have been rotting in

our graves long before now but for the simple fact that we came to life late enough to enter the post-Listerian age—we have special reasons to think with gratitude, emotion, and reverence of the names PASTEUR and LISTER.

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SELECTION OF DRUGS IN HOSPITALS

The hospital should afford unusual opportunities for enhancing rational drug therapy. There particularly may products be submitted to critical inspection. As Sollmann so pointedly remarked at the recent Congress on Medical Education, the "evaluation of therapeutic remedies is not usually among the features to which hospital authorities point with just pride of achievement." The hospital drug room, which reflects directly the medicinal requests of the staff, has hardly kept pace with the modernization of other departments of the hospital. As for proprietary medicines, the shelves often remind us of what Irons aptly terms the "chain drug-soda-fountain-lunchroom." While in most medical schools the student receives good courses in pharmacology, materia medica and therapeutics and is

made familiar with New and Non-official Remedies, it is unfortunately true that when the student becomes an intern in a hospital he finds not unfrequently that irrational prescriptions are written by the "chief" of a service, who has not kept pace with the trend of modern drug therapy. All too often he prescribes proprietary drugs when the same drug is obtainable under the pharmacopeial name at a much lower cost. To mitigate the evils of the prescribing of proprietaries, Irons has suggested the issuance of a hospital manual which shall contain hospital rules and a formulary. The Council on Medical Education with the coöperation of the Council on Pharmacy and Chemistry is following up the suggestion and considering the preparation of such a manual. (Jour. A. M. A., May 31, 1930, p. 1764.)

MINOR SURGERY*

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Evanston, Illinois

THE writer is very grateful for the honor of an invitation to give a paper before the Great Northern Railway Surgeons Association.

Minor surgery is the surgery of low mortality; it is the surgery which requires but few assistants and which generally is done in the out-patient department, or in the office, or in the home. It is an ever-present and integral part of general practice and, in fact, of general surgery. It is probably no exaggeration to say that the group of minor surgical conditions is as numerous as any other group which the physician has to treat. Because of the fortunate propensity of the body to cure most ailments spontaneously, much inefficient work is condoned in minor surgery. There is often wider diversity of opinion as to what constitutes good minor surgery than there is in the treatment of cholecystitis or pneumonia. The subject of minor surgery is commanding an increasing amount of interest and study and some of the most careful clinical and laboratory research will be necessary to decide disputed points.

The low mortality in minor surgical conditions is no reason why these conditions should not deserve the same careful thought and standardization of treatment which is present in the graver ailments. Skillful minor surgery greatly enhances the patient's comfort and reduces his morbidity. As Kanavel says, "There is no greater field for good surgery than is presented by minor surgery."

In engineering, architecture and other professions, the elementary courses are given before, and not simultaneously with, the major courses. It is quite possible that the medical schools of the future will give compulsory courses in minor surgery and that some, at least, of the major surgery will be taught in elective courses.

The strongest plea for the teaching and practice of good minor surgery is the fact that poor minor surgery not infrequently causes the development of grave surgical conditions which could

have been avoided. "Too often," says Kanavel, "minor surgery becomes major surgery through carelessness or incompetence."

We are all familiar with the occurrence of grave generalized infections from trivial breaks in the skin. The writer has seen a staphylococcus septicemia with multiple bone metastases originating from a neglected blister of the heel. The presence of a slightly infected cutaneous wound becomes important when a trauma, as a strained muscle, occurs elsewhere in the body. The bacteria will often center and propagate in the locus resistentiæ minoris. Friction blisters should be prevented if possible. If they occur they should be protected. If they seem likely to rupture they may be opened under aseptic precautions through the intact adjacent skin. Once the blister be infected, the roof should be removed and the subjacent epithelium should be treated with a mild antiseptic such as mercurochrome ointment or a 5 per cent tannic acid ointment. Children are prone to acquire abrasions over the elbows or knees. These abrasions soon become infected and healing is delayed by the constant motion of the part. Rest, and wet boric dressings are indicated and where there is a tendency to crust formation with pus beneath the crust, the latter should be removed and an antiseptic ointment or wet dressing applied.

Meticulous early care of trivial lacerations will pay big dividends in the reduction of morbidity. The first concern in the treatment of a small wound is the control of hemorrhage. Frequently a tourniquet has been applied with such tension as to occlude the veins and not the arteries. It is a common experience to see bleeding cease on the removal of such a tourniquet. Pressure and elevation of the part will stop practically any venous bleeding and most bleeding from small arteries. The vascularity of the scalp lends itself particularly to bleeding. It is practically always futile to attempt the ligation of bleeding points in the scalp. The introduction of a few sutures will control such bleeding. Spurting arteries in muscle should be ligated. To attempt

*Read before the Great Northern Railway Surgeons Association, Grand Forks, N. D., June 20, 1930.

control of muscle bleeding by suturing the skin tightly over it is poor surgical technic; a hematoma and continued bleeding will practically always result.

The hair about the wound should be shaved and the skin cleansed and treated with an antiseptic before the introduction of an antiseptic into the wound.

Recent studies of skin antiseptics have brought forward interesting results. Simmons¹ concluded that tincture of iodine was much more effective than any solution of mercurochrome for use on an unbroken skin. German² found acriflavine (1:800 to 1:1600) to be more efficient than gentian violet, mercurochrome and picric acid. Allen,³ while admitting that present methods of judging antiseptics do not constitute an accurate index of their practical worth, found the halogens to be much superior to the dyes (mercurochrome and acriflavine). The most recent and most interesting study is that of Raiziss, Severac, and Moetsch,⁴ who studied the sterilizing properties of various antiseptics on the infected skin. Ethyl alcohol and hexyresorcinol (S. T. 37) were found to be extremely inefficient. Two per cent acriflavine gave sterilization in 80 per cent of the cases and 7 per cent iodine in 88 per cent. Five per cent iodine was ineffective. Two per cent mercurochrome-alcohol-acetone-water solution showed only seventy-nine per cent efficiency. On the other hand, 1:2500 dilution of metaphen produced one hundred per cent sterilization. Their studies indicated that better results were obtained with metaphen in dilutions 175 and 50 times greater than those employed for iodine and mercurochrome respectively. It is not improbable that metaphen, which is chemically mercuri—4, nitro—2, cresol, will become the antiseptic of choice for minor surgical wounds. It may be used in a dilution of 1:1200 to 1:2500. The writer also uses 2 per cent aqueous solution of mercurochrome and 1:1000 acriflavine solution. Tincture of iodine is rarely used. A two per cent mercurochrome ointment in a base of 10 per cent lanolin and 90 per cent vaseline is useful for some wounds.

A wound should never be sealed with collodion; tetanus has developed following the application of collodion to a "brush burn." Punctured wounds should always be given most careful attention. They are best carbolized, and where doubt as to the source of the wound exists, tetanus antitoxin is given after first ascer-

taining the patient's nonsusceptibility to horse serum. A rusty nail on a fence post may be perfectly safe because no anaërobic organisms can live on it, but the nail embedded in the garden dirt is the one to fear. Moreover, a so-called "clean" nail may drive into the foot tetanus organisms which were on the skin or the outside of the shoe. Great responsibility attaches to the omission of tetanus antitoxin. Exceeding care should be taken in ascertaining if the patient has recently had horse serum or is sensitive to horse serum. Fatal anaphylactic reactions have occurred where this precaution has been omitted. Where the suspicion of sensitivity exists, a drop or two of the diluted serum should be given and the patient be carefully observed for reaction. Should a reaction occur, adrenalin is to be exhibited. In cases where it is impossible to administer tetanus antitoxin, a thorough surgical excision of the wound should be done.

Approximation of wound edges usually greatly diminishes the time required for recovery and lessens the likelihood of infection. Unquestionably, however, too many sutures are introduced in most wounds, particularly in scalp wounds. Gaping scalp wounds 1 to 1.5 inches in length will heal very quickly without any sutures whatsoever, but merely a simple bandage. In small wounds where the skin is not in motion or subject to stress, an adhesive plaster dumbbell, the narrow portion of which does not exceed 1/16 to 1/8 of an inch, is probably superior to a suture. Michel clips are also useful, but difficult to put in. Where sutures are to be placed, the anesthetizing of the skin borders with local anesthesia is greatly appreciated by the patient. For this purpose 2 per cent novocain is injected by means of a short beveled 27 gauge needle into the intact skin border. Ragged wound edges should be trimmed off and deep wounds should be drained with a small piece of rubber or a very narrow strip of selvedged gauze packing. Where the skin flap is large, counter drainage openings should be made.

Furuncles and carbuncles should *not* be traumatized by squeezing or a dull knife. Of late softening poultices, unguents, and warm boric dressings have assumed a larger rôle in the treatment of furuncles than previously. In progressive carbuncles, Carp⁵ has had some success in the injection of autogenous blood at the borders of the carbuncle. Three to six intracutaneous and subcutaneous circum-injections were made under

general anesthesia. Carp believes the pain is less, the time of cure less and that the scar is minimized by this method. The administration of 3 grain capsules of bisulphate of quinine seems to have a distinctly advantageous effect in these cases. The value of tin and manganese is still in question. The studies of Besredka⁶ are very hopeful in this connection. He has found that the application of dressings wet with culture filtrates has a beneficial effect on furuncles. The experiences of Rice⁷ in the treatment of boils with bacteriophage are very impressive. Marked improvement was noted after treating the furuncles with dressings moistened with bacteriophage or by injecting the bacteriophage into the furuncle. When fluctuation is present, incision must be generous and must be made by a sharp knife. The tiny "medical" incisions are painful and generally ineffectual. It is preferable to insert a small gauze or rubber drain for at least the first twenty-four hours. Carbuncles which do not respond to twenty-four hours of boric fomentations should be treated by radical surgical incision with under-cutting of the flaps. Furuncles are best incised under nitrous oxide or cautious freezing with ethyl chloride. Local anethesia solution should not be injected into an infected area.

Minor fractures are often overlooked. Lip-ping fractures of the phalanges may be missed because of the swelling if an *x*-ray is not taken and the true lesion undiscovered until the finger heals with a bony deformity. Magnuson⁸ has clearly shown in fractures of the base finger phalanx how the lumbricalis muscle exercises an extension effect on the distal fragment with the result that, unless prevented, a flexion deformity will occur at the site of the fracture. Much skill and ingenuity must be exercised in the treatment of finger fractures. Thomson⁹ first described the valuable method of applying traction in finger fractures by thread passed through a hole in the nail. Numerous other methods of applying traction in finger fractures have been devised. In some cases, bandaging over a roller bandage will suffice, but *x*-ray should not be omitted after the dressing has been applied.

Fractures of the metacarpals are particularly prone to dorsal deformity because of the pull of the interosseous muscle upon the fragments. This throws the distal head of the bone into the palm of the hand, making a painful prominence. Magnuson advises treating these fractures by

posterior splinting with a dorsal pad over the point of the fracture and a palmar pad over the distal head.

Fractures of the base of the fifth metatarsal are commonly mistaken for sprains. Tenderness at the point of injury and *x*-ray will make the diagnosis. Immobilization in plaster of Paris will effect the quickest cure. Similarly small linear fractures of the scaphoid of the wrist will go without proper immobilization if accurate *x*-ray be omitted. Fractures of the epicondyles of the humerus may be mistaken for a sprain of the elbow.

Falls upon the head or upon the buttocks are often the cause of painful backs which sometimes are thought to be sprains. After a few days' rest most of the symptoms disappear, only to return upon resumption of activity. In these cases there may be a compression fracture of the vertebra which is only discernible in well made lateral *x*-rays. The treatment is rest in lordosis on a Bradford frame or in a cast for six to eight weeks and the wearing of a Taylor spine brace for four to six months. Dunlop and Parker¹⁰ have devised a useful method of decompression of compressed vertebral fractures. The reduction is effected under anesthesia by tossing the patient and, with the back in hyperextension, catching his weight at the injured area across a taut sheet folded six inches wide while strong traction is made on the body. The reduction is often accomplished merely by increasing the amount of lordosis daily for a few days by arching up the back over pillows or sandbags or by the use of a properly elevating bed.

Small deep incised wounds of the fingers may be accompanied by section of the flexor digitorum profundus tendon, which may be overlooked unless the absence of flexion of the distal phalanx is noticed. The repair of these severed tendons is made through an incision on the side of the finger, avoiding as much as possible the flexion creases. For approximation of the cut tendon ends, the reinforced stitch of Bunnell is useful. Fine chromic catgut seems preferable for suture.

The search for needles and other foreign bodies presents a dismal chapter. Unless these objects are palpable, the operation for their removal should never be undertaken without fluoroscopic control and good assistance. Prolonged dissection under direct vision is not only often

futile but may be actually injurious to the extremity.

Failure to recognize some of the more uncommon skin infections may be disastrous. In anthrax the induration surrounding the lesion and the constitutional symptoms are more severe than in ordinary pyogenic infections. The diagnosis may be confirmed by examination of the pus in cultures and smears. The treatment is not local but the administration of anti-anthrax serum. The diagnosis of actinomycosis is made by finding the pin-head sized, sulphur yellow granules in the pus and the discovery of the organism (the ray-fungus). Complete excision is of great value in the early stages. In the later stages the fistulous tracts should be freely opened and curetted. The iodides are administered. Blastomycosis is a chronic infectious disease caused by the yeast fungus. The organism is readily found in the pus which has first been moistened with a 15 per cent potassium hydroxide solution. Potassium iodide and neo-arsphenamine are of value in the treatment. Surgery is employed only occasionally.

Even a circumcision may be poorly done. Too much or too little of the foreskin may be removed or bleeding points may not be properly controlled. Moreover circumcision is doubtless performed more frequently than need be. The principal indications are marked phimosis and balanitis. Dr. Pugsley of Bayard, Nebraska, has demonstrated how a paraphimosis may often be reduced without incision by the application of finger cots.

The failure to observe the proper technic of catheterization has led to many cases of stubborn cystitis.

Cauterization of the primary lesion of syphilis prevents the early treatment which a dark field examination would indicate.

A frequent cause of failure in the treatment of paronychia infections is the incomplete removal of the finger nail. The nail base may be torn off and left behind, where it acts as a foreign body and prolongs suppuration. Many paronychias are, of course, successfully treated by simple incision of the abscess, if present, at the nail border. The dangers of inadequate treatment of felons and tendon sheath infections are well known to all of us.

Additions to our knowledge of minor surgery are being made each year. Clinical research is

clearing up disputed points. A few of the newer contributions may be mentioned.

The Winograd¹¹ operation for ingrown toe nails is a distinct advance over the older operations. The nail and nail bed are removed but the skin edge at the lateral border of the nail is left intact.

Since Davidson¹² in 1925 announced the tannic acid treatment of burns this method of treatment has come to be recognized as one of the outstanding therapeutic contributions of the generation. The patient is placed in a heated tent and his naked skin, from which any grease has been removed, is sprayed every 15 minutes with a 5 to 10 per cent freshly prepared aqueous solution of tannic acid until the burned areas are dark brown or black and are thoroughly tanned. In extensive superficial burns the blood becomes highly concentrated. This concentration of the blood is readily demonstrated by hemoglobin estimations. Hemoglobin of 125 per cent is the danger level according to Underhill¹³; as high as 163 per cent has been reported. The active administration of fluids is energetically indicated to combat this blood concentration. At least 1 quart of fluid for every 25 pounds of body weight should be given in 24 hours.¹⁴ Normal saline or dextrose Ringer's solution is given by infusion and hypodermoclysis and saline or tap water is given by proctoclysis. After the tanned areas are hard and dry the patient is simply left without covering in the heated tent. Should suppuration develop beneath the crusts they should be opened or partially removed and the underlying area irrigated with saline—not boric solution. Wide areas denuded of skin will require grafting. For this purpose Thiersch or Reverdin grafts are often suitable.

In cases of severe electric shock lumbar puncture has been found to be a valuable adjunct to artificial respiration. It should be done as early as possible.

The work of de Takats, Sicard, McPheeters and others has placed on a firm basis the obliteration of varicose veins by injection of segments with a sclerosing solution. De Takats¹⁵ employs 5 to 10 c.c. of a solution of equal parts of a 50 per cent dextrose solution and a 30 per cent solution of sodium chloride. A segment of the vein is blocked off with the fingers while the solution is injected and for two minutes afterwards. A cotton plug is then pressed against

the injected area and held firmly in place for two days. Two injections may be given at once and the treatments twice a week. An elastic bandage is worn during the time. This treatment is often combined with ambulatory ligation of the saphenous vein. De Takats¹⁶ says that ambulatory ligation of the saphenous vein is indicated in cases where the saphenous trunk above the knee is dilated and shows marked reflux from above. If the main reflux is from the deep communicating veins, the operation is obviously useless. The ligation reduced the number of injections below the ligation.

In perfringens antitoxin we now have a weapon against gas gangrene in cases where the development of this condition is suspected.

Since the publication of Caylor's work¹⁷ we can no longer regard the sebaceous cyst as innocuous. In Caylor's series of 236 cases, 3.4 per cent became malignant. A percentage this high should cause us to advise the excision of all sebaceous cysts.

Fractures of the clavicle are to be treated by clavicular cross splints or figure of eight braces which are on the market. While these braces and splints are being worn, care should be taken that circulation is not impaired, that the patient give adequate exercise to his arms, and that the skin beneath the brace be kept well powdered.

The Lahey operation¹⁸ is a distinct advance in the treatment of pilonidal sinus.

The closed treatment of empyema cavities involves minor surgical procedures of careful exactitude.

Local anesthesia has had an increasing field of usefulness in minor surgery. It can be used profitably in the revision of finger injuries where a nerve block of 2 per cent novocain is injected on each side of the base of the finger. It is also used in the removal of hemorrhoids and the excision of fissures-in-ano, and in the reduction of certain fractures. For this latter purpose the nerve block method is probably superior to infiltration.

In the treatment of many fractures the molded plaster of Paris splint has superseded circular plaster casts. These splints accurately fit any shape of the extremity and are far superior to the commercial metal splints. They are made by spreading the wet plaster bandages on a flat surface to the desired length and thickness, taking care to rub the wet bandage as it is folded over on itself. This wet splint is then carefully ap-

plied to the extremity and allowed to harden in the exact shape desired.

The writer feels that the treatment of ganglions by dispersion, that is, striking with a hard object, is superior to excision and has employed it frequently. Carp and Stout¹⁹ found fewer recurrences after dispersion than after excision. Dr. J. S. Welch of Lincoln, Nebraska, successfully treats ganglions by simply transfixing them with a fine cataract knife.

The removal of tattoo marks can be successfully accomplished by the tannic acid and silver nitrate method described by Shie.²⁰

In sprained knees, painfully distended with fluid, repeated aspirations will give great relief and will facilitate recovery. The aspiration is made one inch to the outer side of the patella.

The valgus felt pad in sprains of the external lateral ligament of the ankle constitutes a very valuable addition to the treatment of that condition. These tapering pads are glued inside the shoe on the same side as the injury and take off the strain from the wrenched ligament.

The splendid results in the treatment of plantar warts by radium will highly recommend that method of treatment.

In whole blood transfusions the writer has found the Scannell three-way valve apparatus to be the most generally useful. By means of this apparatus the blood of the donor is pumped directly to the vein of the recipient. A word of warning must be said against using the same donor more than once for the same recipient. The writer has seen a serious anaphylactic reaction follow such a procedure.

The writer, in closing, wishes to urge all physicians to report in the literature all original minor surgical procedures which they have found to be of use. No matter how trivial the conditions are for which the method is recommended, all patients and doctors will welcome additions and refinements of technic.

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THE ACTIVITY OF OFFICIAL PREPARATIONS OF ERGOT

Recently the conviction has grown among pharmacologists that, while undoubtedly histamine and tyramine play a part in the pharmacologic responses to ergot under laboratory conditions, they have little or nothing to do with the action of ergot as used clinically. It is generally held at present that the alkaloids are the important constituents. With the development of this belief has come naturally an insistence that preparations offered to the medical profession should contain them. In 1929 the Council on Pharmacy and Chemistry omitted from New and Non-official Remedies those preparations of ergot which, from their method of manufacture, were not likely to contain, or were not shown by proper methods of assay to contain, important amounts of alkaloids. The United States Pharmacopeia not only prescribes an efficient method of extraction in the preparation of the fluidextract, the only official preparation, but requires in addition that the preparation be assayed by a biologic method which determines the alkaloidal content. An examination of the market supply of fluid-

extract of ergot made in 1928 revealed only one of five to have less than the required strength. In this examination most proprietary ergot preparations were found to be altogether inactive or distinctly below the strength claimed for them. Similar results for proprietary ergot preparations, some of which are marketed in this country, have recently been reported abroad. Two investigations have recently been published that indicate that the deterioration of fluidextract of ergot does not proceed rapidly. There is no real reason why the American physician should not continue to use with confidence fluidextracts made by reputable firms in accordance with the Pharmacopeial method and shown by proper methods of assay to contain the activity required by the Pharmacopeial standard. If he uses other than official preparations, he should convince himself that the non-official preparation used actually possesses the properties characteristic of a standard ergot preparation: if it has been accepted by the Council on Pharmacy and Chemistry for New and Non-official Remedies the composition and efficiency may be depended on. (Jour. A. M. A., May 10, 1930, p. 1504.)

TUBERCULOSIS OF THE INTESTINE: ITS DIFFERENTIAL DIAGNOSIS*

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TUBERCULOSIS of the intestine readily divides itself into two main types, the ulcerative type and the hyperplastic or hypertrophic type. Certain writers have added a fibrous or sclerotic type.

In the first type mentioned, the gross pathologic changes are varied. The evolution of the tuberculous process may be seen, including formation of tubercles, caseation, ulceration and fibrosis. The earliest lesions usually begin in the solitary lymph follicles or Peyer's patches. The ulcers may begin as mere abrasions, and by the coalescence of numerous small lesions larger ulcers may result. In the typical ulcers there is marked infiltration of various tissue elements, everted edges, and considerable undermining. The floor of the ulcer may be formed by submucosa, muscularis, and is often covered with necrotic debris. On the serous side of the ulcers may appear groups of tubercles. In the small intestine, the ulcers are irregular, and eventually may encircle the bowel; in the colon the ulcers are transverse to the long axis and may girdle the bowel in ring-like fashion. The extent of disease, the rapidity of its progress, and the length of time the patient has had trouble, may be factors in variations of individual ulcers.

In the second type of intestinal tuberculosis mentioned, the essential changes seem to include proliferation of connective tissue, involving all layers of the bowel and extending completely around the intestine. The wall eventually becomes thick, and may present a fusiform enlargement, difficult to distinguish grossly from a new growth. The lumen may become narrowed until it is almost occluded before patients are impressed with their disability.

A third type of tuberculosis of the intestine, the so-called sclerotic or fibrous type, is probably secondary to extensive ulcerative lesions. Here there is great thickening of the wall of the bowel from connective tissue. The stenosis is usually

circular and tends toward annular constriction. Such sclerotic regions may be multiple.

The pathogenesis of the intestinal lesions of tuberculosis remains a debated question. Goldberg and Smithies, who recently compiled a complete review of tuberculous enterocolitis, lean toward the view that the greatest number of cases originate primarily in the mucous membrane by direct contact with the infecting mass. This implies that tuberculosis is secondary to lesions elsewhere and this is usually the case. Others have emphasized the possibility of blood-borne infection. Still others have suggested infection through the peritoneal route. That the latter is rare is suggested by a review by Lemon of fifty cases of tuberculosis of the colon, in which there was tuberculous peritonitis in only ten.

The incidence and site of election of the lesions of intestinal tuberculosis have a significant bearing on its diagnosis. Osler stated that in 1,000 necropsies in cases of tuberculosis in hospitals in Munich, intestinal tuberculosis was present in 566. The lesions are most prevalent in the ileocecal coil; that is, in the terminal portion of the ileum and in the cecum. This applies to the ulcerative as well as to the hyperplastic forms. Why these regions of predilection, or of greater susceptibility, exist remains a debated point. Change in the flow of intestinal content, initiation of segmental mass and different haustral motion in the colon, or, as Brown has pointed out, cecal stasis, reversed peristalsis of the ascending colon, and the richness of the lymphoid structures in the ileocecal region, may all be factors in this localization of tuberculous lesions. At any rate, it is known that their incidence in the large intestine varies directly to their proximity to the cecum and inversely to their proximity to the rectum.

The significance of the presence of acid-fast bacilli in the stools often has been over-rated. Various authors have noted acid-fast bacilli in the stools of 90 per cent of the patients with pulmonary tuberculosis, of whom only 5 to 10

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per cent had intestinal lesions. Furthermore, other acid-fast organisms, such as *Bacillus smegma* and various saprophytes, may take the acid-fast stain.

The symptoms of the well advanced cases of ulcerative or hyperplastic tuberculosis are usually

often is not possible, and surgical intervention will be necessary to establish the diagnosis. Differential diagnosis rests primarily between the hyperplastic form of tuberculosis, malignancy, actinomycosis, and the nontuberculous pyogenic type of granuloma previously reported.² In this granuloma there is often a history of appendicitis with perforation or of other perityphlitic inflammatory disease (Fig. 1).

The diagnosis of the ulcerative form of tuberculosis presents a much more widely diversified problem. The symptoms are often vague and varied. Pain may be periodic or constant; it may be worse after eating and may be referred to the epigastrium. Occasionally it will be severe and cramp-like, or it may be dull and constant. Frequency and severity of gas pains may increase with the advancement of the disease. Pain may be markedly relieved by movement of the bowels. Distress after eating, so-called indigestion, and hyperacidity, gas, nausea, and vomiting are frequently noted. The abdomen may have a "doughy" feel, and tenderness along the line of the colon is not uncommon. Progressive loss of weight is common. Diarrhea and constipation often appear alternately, each persisting for several days or weeks at a time. However, if lesions are extensive, diarrhea usually persists. The stools are usually profuse, thin, and watery. Grossly visible blood is usually absent.

When lesions involve the large intestine to and including the rectum, the proctoscope usually discloses a characteristic picture. The ulcers are ragged, irregular, large, with indurated edges and overhanging margins, and with patches of normal mucous membrane between the lesions. However, too often, the lesions do not involve the rectum and sigmoid portion, so that the roentgenogram offers the most important diagnostic aid.

In a paper entitled "Diseases of the large intestine"¹ appears a typical roentgenogram of an ulcerative type of tuberculosis. The most extensive deformity appears in the cecum and ascending colon. Irregular involvement of the mucosa becomes reduced as the left side of the colon is approached. There is not the immense thickening of the wall, so characteristic of chronic ulcerative colitis, and a tendency toward the maintenance of haustra persists. Writhing and rapid emptying and filling of the ileocecal coil is seen under the fluoroscope. The finding of a distant



Fig. 1. Filling defect caused by pericecal lesion.

marked but rarely diagnostic. In the earlier cases they are difficult to appreciate.

In the hypertrophic type, associated pulmonary disease is often not demonstrable, although careful search of roentgenograms usually will reveal an old lesion. In such cases, ulceration is not a feature and the first symptoms noted are usually those of beginning or chronic obstruction. Not infrequently the patient complains first of palpable tumor, usually in the ileocecal region. Borborygmus may be present; later, nausea, colicky pains, and days of watery stools alternating with days of great difficulty in obtaining satisfactory evacuation of the bowel may occur. The roentgenogram may reveal a filling defect, not unlike that of a malignant lesion, but its large size, the general well-being of the patient, his age, and the absence of blood in the stools often will lend clues to the diagnosis. Clinically, however, accurate differentiation of a malignant lesion and of hyperplastic tuberculosis

tuberculous focus often clinches the diagnosis.

When the diagnosis rests between a regional type of chronic ulcerative colitis or amebic ulceration, the therapeutic test often will help to settle the difficulty.

The five common conditions that cause differential difficulties include amebic ulceration, chronic ulcerative colitis, diverticulitis, polyposis, and malignant disease. Except in the rare cases of bleeding, little difficulty will be encountered in distinguishing diverticulitis from other conditions, and here the roentgenogram usually will establish the diagnosis. Again, in the clear-cut case of chronic ulcerative colitis, no difficulty should be encountered. The typical proctoscopic picture, with diffuse involvement of the mucous membrane, myriads of minute ulcers, granular, easily bleeding mucous membrane, and the characteristic roentgenogram of "a foreshortened, narrowed, nonhaustrated colon cannot be confused with any other form of ulceration of the colon. There is, however, a form of chronic ulcerative colitis in which parts of the large intestine other than the rectum are involved. This affords the greatest diagnostic difficulties³ (Fig. 2). Although chronic ulcerative colitis usually begins in the rectum, it may attack all or any portion of the large intestine. Whatever segment is affected by the disease, the roentgenologic picture is essentially the same, but when a portion of the right side of the colon is affected, difficulties may arise. However, the only real similarity between this form of chronic ulcerative colitis and tuberculosis is usually that the site of involvement may be the same. In ulcerative colitis, the colon is narrowed, and there is often abrupt change from diseased to normal bowel. The absence of tuberculous foci elsewhere in the body, the length of the history, the occurrence of exacerbations and remissions, the presence of blood in the stools, and finally, the therapeutic test with the chronic ulcerative colitis serum usually help to clear the diagnosis. Occasionally, however, exploration is necessary to establish it.

Amebic ulceration may afford a real diagnostic difficulty. First, both amebiasis and intestinal tuberculosis have the cecum as their site of predilection. A patient with severe amebic ulceration may be just as sick as one with advanced intestinal tuberculosis. However, if amebiasis is present, the patient will pass large

amounts of blood in the stool. Furthermore, he is less likely than the tuberculous patient to have stools at night. The tendency is rather to be free from stools at night. In cases of amebiasis the proctoscope usually will disclose characteristic, punched-out ulcers, covered by a fleck of



Fig. 2. The narrowed, nonhaustrated transverse colon after the barium enema.

mucus, with a hyperemic surrounding zone, and between ulcers normal mucous membrane. But in cases of advanced, extensive disease, when ulcers have coalesced to form large sloughing bases, the proctoscope alone will not suffice. The roentgenographic appearance is not often characteristic, but in some cases of amebic ulceration, positive roentgenologic diagnosis can be made. The lesions characteristically involve the right side of the colon, and present a picture resembling in some respects the involvement by chronic ulcerative colitis, but less extensive. The therapeutic test with emetine and arsenic will aid in the diagnosis. However, finding of the *Endamoeba histolytica* in the stool or in scrapings from the ulcers will establish it.

The history in cases of polyposis can readily be confused with the history of a case of tuberculosis. This is particularly true because both diseases are likely to attack young persons, and because in both there is often a history of dis-

ability of long standing. Here again the proctoscope and the roentgenogram will help to clarify the diagnosis.

Malignant disease need only rarely present difficulties of diagnosis. The usual history of onset with rectal bleeding, relatively rapid progres-

COMMENT AND SUMMARY

The lesions of greatest significance in making a differential diagnosis in cases of tuberculosis of the large intestine divide themselves according to the type of tuberculosis with which one is dealing. The hyperplastic type must be distin-

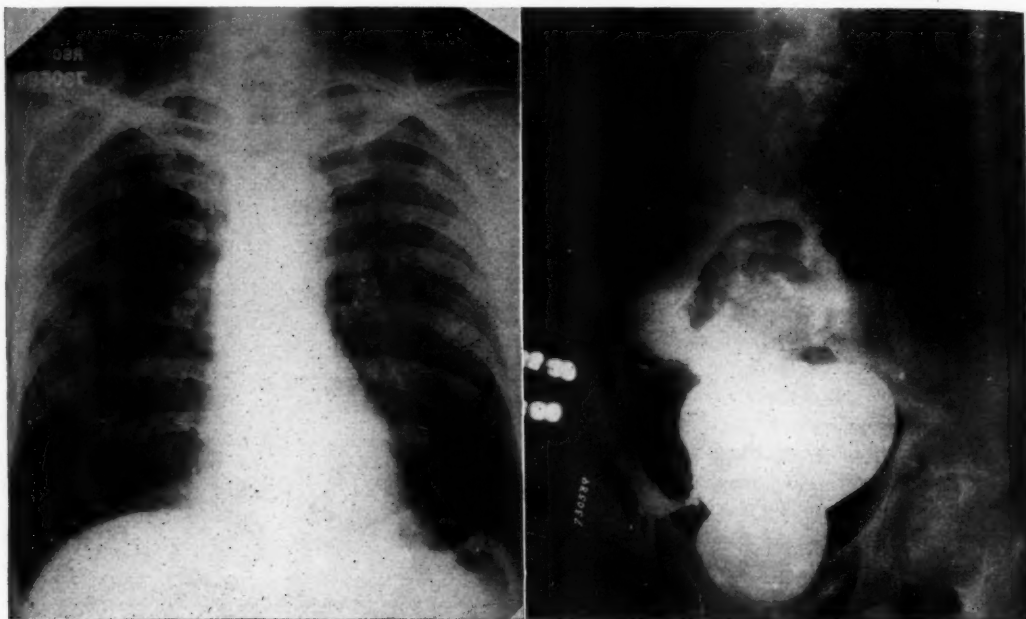


Fig. 3. a, The thorax of a patient with active pulmonary tuberculosis and carcinoma of the sigmoid; b, obstructive filling defect in the sigmoid is shown.

sion, signs of obstruction in persons past middle life, without a demonstrable tuberculous focus, usually readily establishes the character of the trouble if malignancy is present. However, there are instances in which real difficulties arise. Cases are occasionally seen in which two lesions coexist. A case in point is briefly mentioned.

A man, aged sixty years, came to the clinic in February, 1930, with a history of pulmonary disease of fifteen years' duration, with cough, and purulent sputum, which contained large numbers of acid-fast bacilli. For a year he had experienced slight difficulty in moving the bowels, with some straining and rectal bleeding. A proctoscopic examination was negative for 24 cm. of the bowel examined. A roentgenogram of the thorax revealed evidence of active pulmonary tuberculosis; one of the colon disclosed a filling defect of the sigmoid (Fig. 3). The lesion was thought to be malignant but exploration was necessary to establish this fact.

guished from malignant disease, actinomycosis, pyogenic pericecal or ligneous reaction, causing cecal deformity, localized diverticulosis, and other benign cecal and pericecal lesions. No stress has been laid on lesions like the cholesteatoma because of their rarity, nor on renal or other intra-abdominal lesions because this study is concerned with the differentiation of lesions intrinsic in the large intestine.

The ulcerative type must be distinguished from malignant disease, diverticulitis, polyposis, amebic ulceration, and chronic ulcerative colitis.

Amebic ulceration, and the regional or migratory type of chronic ulcerative colitis, present the greatest differential difficulties.

Gross examination of the stools with the naked eye gives valuable information about the various ulcerative forms of disease of the colon. The

proctoscope and the roentgenogram are the most valuable diagnostic aids.

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THE PHARMACOPEIAL CONVENTION

At the recently held Pharmacopeial Convention in Washington, the delegates with commercial interests far outnumbered those from the medical profession. For the interests that opposed medical control of therapeutics, leadership was assumed by Henry H. Rusby, the "sacred cow" of certain druggists. Rusby was testifier for the Wine of Cardui Company in its suit against the American Medical Association, a testifier for a firm against which the Post Office issued a fraud order, a testimonial producer for the Fleischmann Company, and he has been the chief supporter of Ambruster, importer of Spanish ergot, in his attacks on the Food and Drugs Department. At the previous convention an agreement was reached that the scope of the Pharmacopeia, at least so far as concerned therapeutic usefulness, be determined by the medical members of the Revision Committee and that questions of pharmaceutical necessity be determined by the pharmaceutical members. At the present conven-

tion, Torald Sollmann offered a motion to instruct the Committee on Revision to charge the medical members with the responsibility of final decisions in the selection of products of therapeutic usefulness. This motion was not adopted, instead it was decided that a two-thirds vote of the Revision Committee would finally settle the question of inclusion of any article. Since the pharmaceutical interests far outnumber the medical representation, this means that pharmacists will determine the admission of drugs to the Pharmacopeia. It is clear that the U. S. Pharmacopeia is confronted with an epoch of degeneration against which the medical and scientific members of the Revision Committee are likely to fight a losing battle. The present organization of the U. S. Pharmacopeial convention is undemocratic and unscientific. Unless some scientific plan for the revision of the Pharmacopeia is adopted, it may be necessary to advocate government control of the entire matter. (*Jour. A. M. A.*, May 24, 1930, p. 1707.)

TUBERCULIDS*

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TUBERCULIDS represent true tuberculous lesions of the skin. They are the result of periodic bacilleamia; in the wider sense of the term, they represent an embolic obstruction of

atery methods, as they are not likely to be found. Individual lesions heal readily, only to be followed by new lesions periodically.

Tuberculids, therefore, represent etiologically



Fig. 1. Lichen scrofulosorum.

the peripheral vessels of the skin and subcutaneous tissue, the embolus or emboli arising from a deeper seated focus, usually the lymph nodes, but also the bones, intestines, and so forth. Strikingly active pulmonary tuberculosis is rarely present. Tuberculids are found in individuals with relatively high immunity quotients. Bacilli can be found in the lesions only very early; they are promptly destroyed by the defense mechanism. It is, therefore, not practical to try a search for the bacilli of tuberculosis by the usual labor-



Fig. 2. Acnitis.

the same but genetically quite a different lesion of the skin from tuberculous conditions of the skin such as lupus vulgaris, scrofuloderma, and tuberculosis verrucosa cutis. The latter spread by peripheral extension only, occasionally being propelled rapidly along the lymphatics. The bacilli are rather readily demonstrated in the tissues, and the evidence points to lack of specific allergy in the patient.

Tuberculids are probably of greatest significance because of their diagnostic value. In a case in which systemic symptoms are obscure, it may require their presence to reach a final diagnosis. They mean active although chronic tu-

*From the Section on Dermatology and Syphilology, the Mayo Clinic, Rochester, Minnesota. Read before the Minnesota Trudeau Society, Rochester, Minnesota, March 29, 1930.

berculosis. Cases are not uncommonly seen with frequent headaches, malaise, and vague pains, asthenia, lack of endurance, possibly obscure fever, or a syndrome that subjects the patient to suspicion of malingering. Patients often have a good color and they may be overweight. In such cases, diagnosis may be utterly impossible without the lesions of the skin. The symptoms of a systemic character probably represent intoxication from a deep-seated focus.

Tuberculids appear in the skin in varied morphologic forms. According to these, they have been classified; the terminology employed to designate various clinical manifestations is descriptive of their morphology.

The more common forms are called lichen scrofulosorum, papulonecrotic tuberculids, and tuberculosis cutis indurative. The genetic mechanism in all these lesions is probably the same, the morphologic manifestation being determined by the grade of immunity, the anatomic structure involved, the pattern of the individual skin

reaction, and possibly other factors as yet unknown.

Lichen scrofulosorum appears as grouped,



Fig. 3. Folliculitis.

acuminate, follicular papules (Fig. 1). Papulonecrotic tuberculids are slightly inflammatory papules with a definite necrotic center, which can readily be picked out, leaving a crateriform de-



Fig. 4. Erythema induratum, ulcerative type.

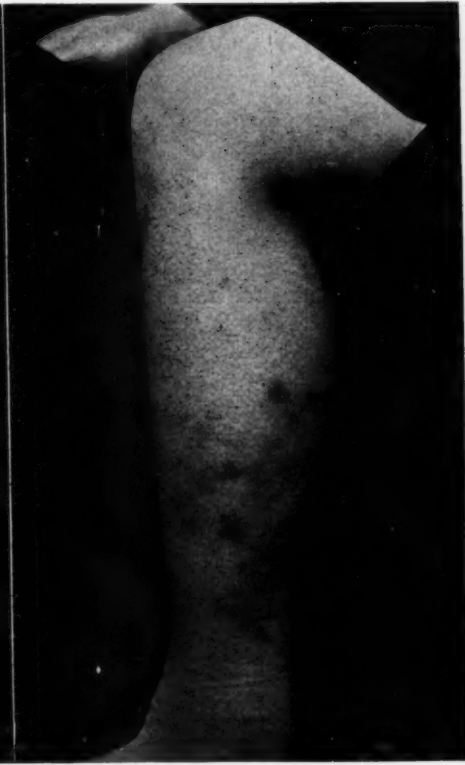


Fig. 5. Erythema induratum, nonulcerative type.

pression. When confined to the face they are spoken of as acnitis (Fig. 2) and when confined to the fingers as folliclis (Fig. 3). Erythema induratum, both the ulcerative and nonulcerative type (Figs. 4 and 5), might be looked on as a papulonecrotic tubercloid, or as belonging to the



Fig. 6. Lupus pernio; distinction of lesions with involvement of fingers is shown.

indurative group. It has features of both and represents essentially a transitional group. One would expect such morphologic manifestations from what has been said. In the indurative group, I place the lesions formerly called the Boeck and Darier Roussy sarcoids, and true lupus pernio (Fig. 6). The Spiegler-Fendt type of sarcoid is no longer believed to be caused by the bacillus of tuberculosis but is placed with the lymphoblastomas. Sarcoids appear as brownish-gray to purplish infiltrations varying in size from a small papule as seen in the small miliary type of Boeck's sarcoid to large plaques, as seen in lupus pernio. Usually a brownish nodule similar to that seen in lupus vulgaris may be elicited with the diascope. In lupus pernio there may be some telangiectasia. The histopathologic picture may be specific or nonspecific and may therefore be of much or of little aid in diagnosis. When

the infiltrate is specific it consists of small whorls in the cutis with definite involvement of the subcuticular fat (Wucheratrophie). The individual whorls are sharply defined by connective tissue strands which in the center consist of epithelioid cells surrounded by a halo of lymphocytes associated with an occasional giant cell. Sarcoids may be closely simulated by syphilis, leprosy, the lymphoblastomas, and even certain septic processes and trichophytosis. It goes without further comment, therefore, that diagnosis must not be determined by inspection alone. A careful investigation is necessary. The indurative tuberculous lesions of the skin are fairly often associated with characteristic systemic changes. It is probable that the latter represent the same type of infiltration in other organs as that seen in the skin. Particularly striking are the distinct nodular infiltrations in the periphery of the lungs. These simulate rather closely malignant metastatic infiltrations. Infiltration about the hilum is not characteristic in this relation. Infiltration into the bones, referred to as fibrocystic changes and by various other names, and in this instance part of a syndrome of tuberculosis, is a part of the picture, and search for it should always be made. In such cases there may be splenomegaly and tenderness over the splenic area. Sometimes a glandular syndrome resembling closely so-called Mikulicz's disease is seen. The patient may have a variety of other systemic and even objective complaints. Not all of these changes, however, are found in a given case. Without a proper interpretation of any possible lesions of the skin, the nature of the condition is hardly clear. Treatment resolves itself into the treatment of tuberculosis. I doubt if any local measures I have used, including roentgen rays and radium, are of any value.

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ACUTE PERFORATED PEPTIC ULCER*

A REVIEW OF 53 OPERATED CASES

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I THOUGHT it might be interesting, and possibly of value, to review some of the cases of acute perforation of gastric and duodenal ulcers which have occurred in recent years at the Minneapolis General and the University of Minnesota Hospitals, and, accordingly, have examined the available records and studied fifty-three cases. Forty-two of these are taken from the records of the Minneapolis General Hospital from the year 1920 to 1930, and eleven from the records of the University of Minnesota Hospital from the year 1924 to 1930. Only those records of the acute perforations were examined, and no notice was taken of the records of the so-called chronic or slow perforating type. In each case the diagnosis was confirmed by operation and the operation itself was undertaken by various members (one being myself) of the surgical staffs of these hospitals.

It is not within the scope of this paper to dwell with any detail upon the various phases of the subject matter, since such have been covered frequently and thoroughly by extensive clinical studies in a voluminous and abounding literature. I have, however, tried to follow up the end results in all of these cases in so far as I was able, but found it very difficult to locate any considerable percentage of the patients who belonged to a floating population, or to get the coöperation of the remainder.

Collins¹ reports finding 181 perforations out of 262 cases of duodenal ulcers examined at post-mortem, and Finney² says that perforation is responsible for 7 per cent of deaths found at autopsy. Relative to the matter of frequency of reported cases, however, authorities vary in their statistics. Welch¹ reports 6.5 per cent; Burton,¹ 13 per cent; Deaver,³ 20 per cent; Musser,¹ 28.1 per cent; Finney,² 28.1 per cent; and Fenwick,¹ 28.5 per cent. Interesting, also, is the fact that such perforations occur more frequently in some countries than in others. In a recent communication, Archibald Young,⁴ Regius Professor of

Surgery at the University of Glasgow, writes me: "We certainly see a very large number of cases of perforation of the stomach and duodenum in my clinic, and the same is true of the clinics of my colleagues. I think it quite certain that perforations occur here more frequently than in many other parts of the world and even in many centers of similar industrial activity to this. Many occasions have occurred where we have had to deal with two, three, or four perforations in one day, and we seldom have many receiving days without a certain number of cases of perforation. What the reason for this greater frequency of perforation is, it is difficult to say." Trout⁵ also found an unusually high incidence of acute perforations of peptic ulcers among soldiers, in Hawaii, and from his study concluded that peptic ulcer occurs half as frequently among white soldiers in Hawaii, and perforations four times as frequently as among enlisted men of the army, serving in the United States.

In this series of 53 cases, I find fifty-one (or 96.4 per cent) occurring in males. This is in full accord with the statistics of other observers. Brown,⁶ in a study of 100 cases, found ninety-five to be among males; Dineen,⁷ out of 142 patients, found 138 males; Guilleminet,⁸ in forty cases, all males; and Urrutia,⁹ reporting fifty-two cases, found the proportion to be 94 per cent males, as did Fermaud¹⁰ in his series.

TABLE I
AGE OF PATIENTS

Under 20	20 to 29	30 to 39	40 to 49	50 to 59	Over 60
1	13	17	11	10	1

The youngest in this series was nineteen and the oldest sixty-six years of age, the average being thirty-seven years. This average also agrees with the statistics of other men, who claim that the largest number of cases occur in the third decade. Wise¹ claims no age, from earliest infancy to extreme old age, is spared.

*Thesis read before the Minnesota Academy of Medicine, at its meeting of April 9, 1930.

Twenty-two per cent of this series were foreign born. In their occupations there was a great deal of variety, although 32 per cent were classed as laborers.

The immediate cause of perforation is not known and, according to Moynihan,¹¹ not easy to discover. The solution undoubtedly lies in the discovery of the etiology of the ulcer itself. To those interested in the experimental phase of this subject, I would recommend reading the thorough article recently published by McCann.¹² It would seem logical to suppose, and as has been frequently quoted, that in the majority, the tissues at the site of the ulcer become so weakened that they are unable to continue their normal physiological function and, as a result, perforation takes place. Wilensky's¹³ theory of embolic phenomena, and Sippy's¹⁴ six factors, bearing on the cause of perforation, have been so frequently mentioned that they are undoubtedly familiar to you. Just as in other series of acute perforations of this type, so in this series, perforation followed straining, excessive drinking, occurred at work or rest, before meals, after a full or heavy meal, in the midst of sleep, and, in fact, anywhere and at any time. Two of this group had a perforation develop while each was in a hospital undergoing examinations by their physician preparatory to arriving at a diagnosis. Olson¹⁵ is convinced that an upper respiratory tract infection, an acute outbreak of oral sepsis, a mild bacteremia, or a toxemia of any sort has a very definite relationship as a predisposing factor in an acute perforation. Colp¹⁶ believes that a sudden physical effort and distention of the stomach are potent factors in producing a sudden perforation of a penetrating ulcer.

In this connection I should like to refer to one of the supposedly predisposing factors, namely, the use of the routine barium meal as used in fluoroscopy and *x*-ray examinations of gastrointestinal cases. Thus Eckman¹⁷ reports five cases where an acute perforation of a peptic ulcer followed the routine use of the barium meal as ordinarily used in fluoroscopy and *x*-ray examination of these cases. More recently others have reported cases, and I myself had occasion to operate upon such a case, in a private patient, within a few hours following the completion of such an examination. Whether these facts are simply a coincidence, or whether these perforations, following the ingestion of the barium meal,

follow only in ulcers of the penetrating type, or whether or not the barium meal is really a predisposing factor, I am unable to say. In any event, it has occurred and has been reported frequently enough to warrant a close observation of the patient by his physician following such an examination, until the immediate danger of an acute perforation is passed. As a matter of interest, it might be mentioned that Powers¹⁸ reports four cases of acute perforation resulting directly from extreme trauma.

In a small number of cases, the onset of the acute perforation is the first definite indication of the presence of a peptic ulcer. This, according to Deaver³ and others, is not the rule, however, as 90 per cent have a previous ulcer history. It must be distinctly borne in mind that the duration of the symptoms, as related by the patients upon their hospital admittance, when they are suffering acutely and are somewhat bewildered, is only more or less accurate. In this group, I find there were twelve patients who, according to their hospital records, denied ever having had any previous gastric disturbance or distress (Table II); five who had suffered only for one month or less; three who had suffered only within a period of six months; three for one year; five for two years; five for three years; one for four years; one for five years; and sixteen for over a five-year period; the longest one of whom suffered for twenty years. In two cases no time period was stated.

Thus, in this series, 75 per cent gave a history of gastric disturbances prior to the onset of the perforation. In Colp's¹⁶ series of twenty cases, 90 per cent gave a history of previous gastric disturbance, one-third of these giving such a history of from five to twelve years' standing. In Henry's¹⁹ series of twenty-five cases, 84 per cent had a history of gastric disturbance, "indigestion," "dyspepsia," etc., extending over months or years.

The acute symptoms were very sudden in 96 per cent of these cases, and, as previously stated, occurred with no relation either as to time, method, or place. In every instance the very sudden and acute pain, described by some as knife-like, by others as cramp-like, stabbing, violent, agonizing and so severe as to double them up, is the first, the most outstanding, the most important and severest subjective sign or symptom. Morphin is said to have little or almost

TABLE II
DURATION OF ACUTE AND CHRONIC SYMPTOMS BEFORE OPERATION WITH OUTCOME

Duration of Acute Symptoms Before Operation	None	Duration of Chronic Symptoms Before Operation																			Not Stated	Total		
		Weeks				Months											Years							
		1	2	3	4	1	2	3	4	5	6	7	8	9	10	11	1	2	3	4			5	over
Under 12 Hrs. L D	8	1	1 2	1					1	1							2 1	4 1	3 1	1	1	12		36 5
12 to 24 Hrs. L D	1					1																1	1 3	
24 to 36 Hrs. L D	1																						1	
36 to 48 Hrs. L D																						1	1	
4 days L D	1																	1					1 1	
7 days L D																					1		1	
Over 7 days L D																					1 1		1 1	
Not 'stated L D	1																						1	

no effect in relieving the pain, which can only be likened, in its acuteness and severity, to the similar one of acute pancreatitis. In this series, the pain was referred to the epigastric region in 36 per cent, more or less vaguely without direct reference to any specific locality, to the abdomen in 58 per cent, and to the umbilical region in 7 per cent. Gibson²⁰ stresses referred pain, especially to some portion of the neck, chest, or shoulders, as an important secondary symptom. According to our records, in this series I did not find such radiation of pain a consistent or constant sign. It may not have been diligently sought by those responsible for the examination of the patient. In two cases pain was referred to the right shoulder; in another two, to the left; in two others, to the lower right abdominal quadrant; in one, to the back; and in one, simply to the right side of the abdomen. Nor did the records show vomiting or nausea to be constant or characteristic signs or symptoms of these perforations. They were, however, recorded in about 40 per cent of the cases, which agrees with the statistics of others, who also state that these

symptoms are without much significance, in so far as a diagnosis of perforation goes.

Collapse or prostration was recorded four times in this series. Surgical shock was not recorded, nor have I myself ever seen it in these cases. Moynihan¹¹ denies that shock is ever present, and Brewer²¹ believes the symptom greatly over-emphasized. Deaver³ reiterates that a low blood pressure, apathy, or a change in the pulse rate are rarely seen in these cases. I agree with Olson¹⁵ that the term is loosely used and, in reference to these cases, should be discarded. The average pulse rate of the patients in this series, as disclosed upon their hospital entrance, was 90; the temperature 98.8°; and the respirations averaged 28 per minute.

Following the sudden onset of pain, the pulse rate remains unchanged or is slightly lower, the temperature remains normal or unchanged if slightly subnormal, while the respiration becomes shallow, of the thoracic type, and increased in frequency. Such patients prefer to be quiet, motionless, with their knees flexed, while the abdomen takes on a scaphoid appearance. and

becomes inflexible and rigid to a degree commonly known as "board-like." This so-called "board-like" abdominal rigidity is the chief, most characteristic and most important physical sign of a perforation. It usually is spread well over the abdomen, although it may be localized more or less definitely in the epigastric region or over the upper half of the abdomen. Hand in hand with abdominal rigidity, goes an extreme abdominal tenderness. In this series, these signs were invariably and almost constantly present. The tenderness may, however, also shift to various abdominal regions, not infrequently radiating or localizing in the lower right quadrant as in cases of acute appendicitis. Tenderness, like rigidity, is an early symptom. Obliteration of liver dullness on percussion is a sign frequently mentioned, but less frequently found. Our records report its presence in three cases. In by far the large majority, it was not mentioned nor recorded. Colp¹⁶ believes that the obliteration of liver dullness, when present, is pathognomonic of intraperitoneal perforation, but emphasizes that it must not be confused with tympany occasioned by a distended colon, and adds that if liver dullness is percussed in the mid-axillary line this error will not occur. Gibson²⁰ says that the obliteration of liver dullness should not be considered positive unless a layer of air can be percussed over the liver, posteriorly.

Leukocytosis is the rule and makes its appearance early, following the onset of pain. The average count as recorded in this series was 15,000, with a correspondingly increased polymorphonuclear count. The differential leukocyte count, according to Gibson,²⁰ is of no assistance.

As the condition progresses, without proper treatment, a reaction sets in, during which time the patient may think and say that he feels improved. This stage is called the transitional stage, or the passing on to true peritonitis with its accompanying symptoms. If, now, a patient is seen for the first time by his physician, the diagnosis becomes more confusing, especially in so far as acute appendicitis with progressive peritonitis is concerned.

If the case is seen early, the diagnosis usually presents no difficulty. The history of the very acute onset, the extreme pain, the board-like rigidity and tenderness of the abdomen, the unchanged pulse rate with absence of shock, readily point toward the diagnosis of an acute abdomen,

most likely a perforated ulcer. House surgeons and interns frequently recognize and diagnose the condition correctly before the Staff surgeon is called to see the patient. In this series, thirty-eight, or over 70 per cent, were correctly diagnosed pre-operatively. Two were diagnosed as perforated viscus, another two as acute abdomen, one as acute perforated ulcer or acute pancreatitis, two as acute perforated ulcer or acute appendicitis, and three as acute appendicitis. In five cases no pre-operative diagnosis was recorded.

Recently Vigyzao²² mentioned the presence of subcutaneous emphysema as diagnostic of perforated ulcer. Such emphysema, he claims, is usually localized in the umbilical or cecal region. According to Wolfson and Gray,²³ this finding has been corroborated by Podlaha, who reports also emphysema of the supraclavicular spaces. Personally, I am unfamiliar with this sign and have found very little reference to it in the literature.

Where, for any reason, the case seems complicated or the diagnosis difficult, the use of fluoroscopy is recommended. Vaughan and Singer²⁴ refer to the early diagnosis or recognition of acute perforations of ulcers, with the x-ray of spontaneous pneumoperitoneum. In fifty-four of their sixty-three cases it was easily demonstrated. The free gas has been seen as early as two hours following the perforation. A small quantity is sufficient for its demonstration. The presence of free air is shown distinctly as a bright zone which shifts on change of position, being most typical when the patient is in an upright position. The sign is of great value and, when found, is considered by some as being pathognomonic. In four cases of this series, this method was used and the diagnosis confirmed at operation.

Because of the time necessarily involved in making preparations for the use of this diagnostic method in these emergency cases, and because in most cases the diagnosis can be made without it, I do not recommend the procedure as a routine measure in every case, nor would I say that the absence of the gas bubble in such an examination was a positive proof that the perforation did not exist.

At times the differential diagnosis of ruptured ulcer presents difficulties. The conditions most frequently encountered, or which must be con-

sidered, are acute perforated appendicitis, acute pancreatitis, acute cholecystitis, diaphragmatic pleurisy, intestinal obstruction, coronary thrombosis, tabetic crises, mesenteric thrombosis, and renal colic. Geier²⁵ has already pointed out that acute appendicitis offers the most difficult point in diagnosis and refers to Moynihan's¹¹ report of forty-nine cases, in eighteen of which the incision was made directly over the appendix after the diagnosis of appendicitis had been made.

Even at operation the pyloric vein cannot always be positively identified, so that differentiation between a gastric or duodenal perforation in these cases is uncertain. In this group, the large majority of the perforations occurred on the anterior surfaces of the duodenum and stomach, and within an inch or an inch and a half of the pyloric ring. They were, for the most part, of the characteristic type, being round, single, resembling a punched-out hole or opening of small size, and found usually at the bottom of the ulcer, the base of which was indurated. Adhesions, if present, were thin and of recent origin. Twenty-seven, or about 50 per cent, were recorded as duodenal, and twenty-one, or 40 per cent, as gastric. Four were classed as gastroduodenal, being found at the junction, and one, classed as jejunal, was found one inch distal to a previous gastroenterostomy. In two cases the perforation was found on the posterior wall of the stomach; in another, near the cardia; and in still another, about 3 inches from the pylorus over the fundus of the stomach. The presence and amount of free fluid was dependent upon adhesions walling off the perforation, or an active peritonitis.

I shall not attempt any description of the pathology of these perforations, nor of the pathology attendant upon them, but should like to call attention to the fact that in no less than 20 per cent of these cases the perforations are of the multiple type, and also that one and the same individual may have repeated perforations of peptic ulcers. Such a case occurred in one of this series (632, M.G.H. 1928), a male patient, who, within a period of five years, had three distinct attacks of acute ulcer perforations. The first occurred in an ulcer on the lesser curvature proximal to the pylorus; the second, post-pyloric; and the third was jejunal. Recovery in each instance, following operation, was uneventful. The case is reported in detail by Ehrlich.²⁶ Like-

wise Henry²⁷ reports the case of a male patient who, within a period of four years, had five distinct perforations, with recovery. Two of these were reported as gastric, two jejunal, and one not stated. Mason and Simon,²⁸ reviewing the literature, have been able to find records of thirty-two authentic cases of the association of two or more perforations in the same or different ulcers. Mikulicz²⁸ reported the first instance of this kind occurring 9 years after the first repair of a perforated gastric ulcer. The patient died and autopsy revealed a second undiscovered perforation on the posterior wall. They also state that in Vianny's²⁸ case there were found three perforations close together near the pylorus; and in one of Brentano's²⁸ cases there were four perforations, also close together on the lesser curvature. In twelve cases the sites of the perforations were symmetrically placed, one on each wall and exactly opposite each other. I mention these cases because, as the authors state, unfortunately it is rarely at operation and usually at necropsy that the diagnosis of multiple lesions has been made. Therefore, in cases of perforated gastric ulcers, both walls should be thoroughly examined at the time of the operation, a fact previously stressed by Elliott.²⁹

As before mentioned, the treatment of the cases recorded in this series was given over to the various members of the surgical staffs of these hospitals. The choice of anesthetic, method of procedure pre- and post-operatively, and the steps of surgical technic were, in each instance, left entirely to the judgment of the surgeon. I find that there are recorded, in this series, twenty-three cases, or 43 per cent, in whom a simple closure of the perforation, with or without reinforcement of an omental tag or its equivalent, was performed; thirteen, or 24.5 per cent, in whom a simple closure plus a gastroenterostomy was performed; three cases in which cauterization with an actual cautery, followed by a closure of the perforation, was done; two in whom cauterization, followed by gastroenterostomy, was recorded; four in whom an excision of the ulcer with simple closure was performed; two in whom excision of the ulcer, followed by gastroenterostomy, was performed; one in whom a gastric resection was made; four who had some form of pyloroplasty, with ulcer excision; and one in whom the cautery and pyloroplasty were both used.

TABLE III
TYPES OF OPERATIONS; INTERVAL BETWEEN ONSET AND OPERATION

	Hours		Days																	Not Stated	Total
	Under 12	12 to 24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Over				
Simple Closure	18	2		2								1								23	
Simple Closure plus Gastroenterostomy	8	2																	3	13	
Cauterization and Closure		1				1													1	3	
Cauterization plus Gastroenterostomy	1				1															2	
Excision of Ulcer and Closure	3	1																		4	
Excision of Ulcer and Gastroenterostomy	2																			2	
Gastric Resection	1																			1	
Pyloroplasty with Excision of Ulcer	4																			4	
Cautery and Pyloroplasty	1																			1	

Just as in the surgical treatment of chronic peptic ulcers, so in the surgical treatment of acute perforation of the same, a wide divergence of opinion still exists except, of course, that cases of acute perforation are emergency surgical cases and should be, as they were in this series, operated upon as soon as practical. Pyloroplasty, in duodenal perforations, is being used with greater frequency. Gastric resection is used in some clinics, in Europe especially, but in my opinion is too formidable, shock-producing, and time-consuming an operation to be used in cases of acute perforation. Excision of gastric ulcers in these cases also is more time-consuming, and means the closing of a larger opening. We should not forget that these are emergency cases and that the time element is of the very greatest importance. In my opinion no set type of operation, unless it be simple closure of the perforation, should be used routinely in any given case. I agree with Colp,¹⁶ who says the treatment of these cases should be the simplest, least time-consuming, and least shock-producing; and with Young,²⁰ who voices the same sentiment in these

words: "That procedure is the best and, for the patient, the safest, which is simplest, most expeditious, most easily and conveniently applied, remembering always that the operation is being done on a patient whose margin of reserve is probably at its lowest." For these reasons he believes, and I hold to the same opinion, that the surgeon should rest content with simple invagination of the ulcer and the covering in of the vaginated area in the most effective manner which the circumstances of the case permit. That a closure of the perforation is the first and most important step in the surgical treatment of the perforation, is undebatable. Whether or not to add the operation of a gastroenterostomy, is still a much unsettled and debated point.

Those favoring gastroenterostomy in addition to simple suture of the perforated ulcer, give as their reasons:

1. That perforation alone does not cure the ulcer, in a large number of cases.
2. That the mortality rate is not affected in properly chosen cases.
3. That the danger of spreading infection is

theoretical rather than of practical importance.

4. That while the gastroenterostomy is not always successful in relieving symptoms or preventing complications, it is so in such a large number of cases that there can no longer be any doubt of its specific effect.

5. That the suture always narrows the lumen and that the gastroenterostomy safeguards against secondary perforations and subsequent stenosis.

6. That, while subsequent jejunal ulcers are a possibility to be recognized, their incidence is extremely low.

To which the objectors of the additional operation of gastroenterostomy reply:

1. That the operation of gastroenterostomy is unnecessary, the perforation itself curing the ulcer.

2. That it adds to the mortality.

3. That there is danger of spreading infection in the peritoneal cavity.

4. That the operation of gastroenterostomy is not satisfactory in 100 per cent of the cases.

5. That reperforation, hemorrhage, and stenosis are exceptional sequelæ.

6. That gastroenterostomy may be followed by jejunal ulcers.

In cases of gastric ulcer perforations, Deaver³ still believes in adding gastroenterostomy to the closure of the perforation. Moynihan¹¹ uses it only when he believes that a condition, such as pyloric obstruction, demands it. This, he says, has been his custom, as it has always seemed advisable to limit the length of the operation to the minimum, and furthermore, in his opinion, cases with simple closure of the perforation have done as well or even better than those in which gastroenterostomy was added. Gibson²⁰ does the same, closing the perforation and adding gastroenterostomy only when obvious stenosis is present. Farr³¹ argues against gastroenterostomy. Wilkensky¹³ believes in simple closure during the emergency, reserving other procedures as deemed best in case labor symptoms warrant reopening the abdomen. Young⁴ and his colleagues are satisfied as a rule with a simple suture or, as they call it, an invagination. Their immediate results have been very satisfactory and Young states that in many cases where the location of the perforated ulcer was such as to suggest a likelihood of recurrence of symptoms or the development of pyloric stenosis, neither occurred.

In this observation he suggests that we have a valuable indication afforded by nature toward a simplification of the treatment of these cases. My own opinion, based on a comparatively small and limited experience, agrees entirely with the above surgeons, and more especially with Brenner,³² who believes that simple closure should be performed and adds that a good practical rule is,—when in doubt, do not perform a gastroenterostomy; it can be performed later if necessary.

Drainage of the abdominal cavity is a matter of choice, or judgment and experience. One gathers from the literature and from conversation with experienced surgeons that less and less heed is given to this part of the treatment than previously. Where careful aspiration has been performed there is, in my opinion, little need for drains. Young³⁰ prefers to use local drainage, having, as he says, a strong conviction that by so doing he minimizes the risk of pulmonary complications.

In this series, out of thirty-one cases in which drainage was used, twenty-four improved and seven died; in eight cases where no drains were used, seven improved and one died; and in fourteen cases in which no record was made as to whether or not drainage was used, nine improved and five died.

The postoperative treatment consists mainly in placing the patient in a Fowler position, giving him fluids, including glucose, in some manner other than orally for the first 24 hours. Following this, small amounts of water may be given by mouth, increasing the amount daily, after which other fluids and proper foods may be given carefully and in gradually increased amounts; also morphin in small doses as required, and gastric lavage as necessary. Needless to say, these patients should be put on a regulated diet, be kept under observation for a period of time consistent with their symptoms and well-being, and carefully observed in a "follow-up" service for at least one year following the operation.

As to prognosis and mortality, every surgeon knows that the successful outcome depends upon early diagnosis and early surgical treatment and that these are of greater importance than the ability and skill of the operator.

As shown in Table IV, death occurred in thirteen cases of this series, representing a mor-

TABLE IV
MORTALITY

Type of Ulcer	Operative Procedure	Time Interval before Operation	Postoperative Time of Death	Post-Mortem	Use of Drains	Cause of Death
Gastric	Simple Closure	4 hours	1 day	none	not stated	Shock (probably)
Duodenal	Actual Cautery	4.5 days	6 days	yes	not stated	General Peritonitis
Gastric	Simple Closure	10 days	2 days	yes	yes	General Peritonitis
Duodenal	Closure plus Gastroenterostomy	not stated	3 days	no	yes	Sudden Death, Probably Pulmonary Embolism
Gastric	Excision	4 hours	16 days	no	yes	Peritonitis (probably)
Gastric	Excision, plus Gastroenterostomy	5.5 hours	6 days	no	yes	Acute Peritonitis (probably)
Duodenal	Simple Closure	7 hours	14 days	no	not stated	General Peritonitis (probably)
Gastric	Simple Closure	27 hours	40 days	yes	not stated	Subdiaphragmatic Abscess, General Pyemia
Pyloric	Excision and Horsley Pyloroplasty	6 hours	60 days	yes	not stated	Post-Operative Pneumothorax, Bronchopneumonia, Pulmonary Atelectasis
Duodenal	Simple Closure	23 hours	5 days	yes	yes	Peritonitis; Bronchopneumonia
Gastric	Cautery and Closure	24 hours	1 day	yes	yes	Bronchopneumonia; Acute Peritonitis
Gastric	Simple Closure	40 hours	2 days	no	yes	Peritonitis (probably)

tality rate of 24.5 per cent. Of these thirteen cases, five died who were operated upon within the 7-hour period, while seven others who died were operated upon within a period of time ranging from 20 hours to 10 days following the onset of the perforation. In one case the time period was not stated. In only six of these cases were postmortem examinations held. Steinbuck³³ believes that, in those dying within 3 days of the operation, death is usually due to shock; those dying in a week usually succumb to peritonitis; and those dying several weeks or months after the operation usually die of subphrenic abscess or liver abscess. He reports an average mortality of 31 per cent in a series of eighty-eight patients, while Ochsner³⁴ reports the mortality rate in the first 12 hours as averaging 28 per cent, and after 24 hours three times as great. Average statistics, however, of large groups reveal that when the operation is performed within the first 12 hours the mortality rate is 6 per cent; within 12 to 24 hours, 30 per cent; and after 24 hours, 80 per cent.

The value of the various surgical procedures as used in the treatment of these perforations

cannot be shown or told, in so far as improvement or cure is concerned, until we learn to employ a very rigid, thorough and exhaustive follow-up system extending over a period of a year or two. As already mentioned by Brenner,³² only by careful follow-up records extending over many months can reliable statistics be obtained as to ultimate cures. Lewisohn³⁵ has most diligently and thoroughly followed up his cases of acute perforations and says that while he feels that radiology ought to be freely employed in follow-up clinics on these cases, yet, in the presence of a previous operation on the pylorus or duodenum, a deformed bulb is not a definite indication of the presence of a recurrent ulcer; that, on the other hand, marked tenderness of this region during the fluoroscopic examination, niches and retention, indicate that the patient still suffers from an inflammatory process at or near the pylorus.

With the excellent and generous assistance of the social service and out-patient departments of these hospitals where the patients were treated, I have attempted by letters, questionnaires, and interviews, to reach these patients and persuade

TABLE V.
END-RESULTS

No.	Type of Ulcer	Year of Operation	Operative Procedure	Result	Symptoms	X-ray	Year of X-ray	X-ray Diagnosis
23	Gastric	1926	Simple Closure	Complete Recovery	None	None	-----	
8	Gastric	1922	Excision of Ulcer	Complete Recovery	None	None	-----	
17	Duodenal	1925	Posterior Gastroenterostomy	Incomplete Recovery	Indigestion, nausea, pain	None	-----	
24	Duodenal	1926	Simple Closure	Complete Recovery	None	None	-----	
30	Duodenal	1927	Posterior Gastroenterostomy	Incomplete Recovery	Indigestion, pain; on diet	Yes	1929	Healed duodenal ulcer; well functioning gastroenterostomy
4	Gastric	1921	Posterior Gastroenterostomy	Complete Recovery	None	None	-----	
18	Duodenal	1925	Posterior Gastroenterostomy	Complete Recovery	None	None	-----	
9	Duodenal	1923	Posterior Gastroenterostomy	Incomplete Recovery	Indigestion, can not eat all foods	None	-----	
6	Duodenal	1921	Posterior Gastroenterostomy	Complete Recovery	None	None	-----	
22	Duodenal	1925	Simple Closure	Incomplete Recovery	Pains in stomach	Yes	1929	No definite evidence of ulcer niche; distinct pyloric deformity
15	Gastric	1924	Gastric Resection, Polya Anastomosis	Complete Recovery	None	Yes	1929	Colitis (spastic); well functioning gastroenterostomy
43	Duodenal	1929	Cauterization, Pyloroplasty	Complete Recovery	None	Yes	1929	Duodenal ulcer present
21	Duodenal	1925	Excision, Pyloroplasty	Incomplete Recovery	Pyrosis, pain after meals	None	-----	
32	Duodenal	1927	Simple Closure	Complete Recovery	Sippy diet	Yes	1929	Probably healed ulcer
42	Duodenal	1928	Cauterization, Gastroenterostomy	Complete Recovery	None	Yes	1929	Duodenal ulcer; gastroenterostomy functioning well
14	Duodenal	1925	Gastroenterostomy	Incomplete Recovery	Ventral Hernia, pyrosis	None	-----	

them to appear at the hospital for physical and x-ray examination, to learn their present condition in so far as it related to the presence or absence of a peptic ulcer. The questionnaire, copied from one used by Young and his colleagues, is as follows:

1. How long have you been sick or ill before you came to the hospital?

2. How have you been feeling since that time?

3. Have you made a complete recovery?

4. Do you have now, or have you had at any time, any of your former or previous symptoms, pains, distress, stomach trouble or indigestion?

5. Do you take food well now?

6. Do you have any pain after eating now?

7. Do you have any trouble with the bowels, either constipation or looseness?

8. Have you gained or lost weight since the operation?

9. Have you any sickness, distress, vomiting, nausea, throwing-up your food, pain with meals, bleeding from the mouth, or hemorrhages?

10. Have you any bleeding by bowel, from the rectum, or black tar-like stools?

Because many patients of this series were transients who moved away from the city and

could not be located, and because others had failed to answer letters and questionnaires or return to the hospital for physical and x-ray examinations, I was able to trace only seventeen of the forty surviving members, a number too small to be of any great value in favoring any definite conclusions. Of these, one died of general paralysis two years after his operation. Of the remaining sixteen, I found seven who had duodenal ulcer perforation and three with gastric ulcer perforation who considered themselves free from symptoms and completely cured, and six duodenal ulcer perforation cases with recurrent symptoms and incomplete cures. Of the latter six, four had gastroenterostomy, one a simple closure, and one an excision of the ulcer area with a Horsley operation. Of the ten who had complete cures, three had a simple closure operation, three had a gastroenterostomy, two had excision of the ulcer—one followed by gastroenterostomy and the other by closure, one had a Polya anastomosis operation, and one a cauterization operation.

Lewisohn,⁸⁵ who has followed up thirty-three cases of perforated gastroduodenal ulcers with most thorough investigations, concludes that "conservative measures heretofore applied in acute perforations of gastroduodenal ulcers fail to effect a permanent cure in a large percentage of cases." He thinks it might be advisable to attempt a radical cure (subtotal gastrectomy) in cases which come to operation very early and where the infection has not spread beyond the immediate neighborhood of the ulcer.

A study of these fifty-three cases leads to the following conclusions:

1. Early diagnosis and early surgical treatment result in the lowest mortality.
2. Simple suture suffices, with a minimum of risk, in these acute emergency cases.
3. Patients should be kept on a restricted diet and under close observation at follow-up clinics for at least one year. If marked symptoms still exist at that time they should be subjected to a second operation as deemed most advisable by the surgeon.

My thanks are due to the superintendents of the Minneapolis General and Minnesota University Hospitals, as well as to the chiefs of the surgical divisions, the staff members and the social service workers of these hospitals, for

their assistance and permission to review and study these cases.

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SERENIUM

According to advertising material sent by E. R. Squibb & Sons to physicians, "Serenium" is "... the result of a search for a compound that would be superior to other chemotherapeutic agents in the treatment of genito-urinary infections ... synthesized by Dr. Ivan I. Ostromislensky ...". The circular recites various more or less ideal qualities to be desired in such a preparation, leaving the impression that "Serenium" possesses these. For the claims made for the product the evidence is slight indeed. Squibb & Sons have apparently abandoned, so far as this preparation is concerned, the conservatism that has characterized the house for nearly three quarters of a century. The advertising does not present any real proof of merit. Squibb & Sons have not requested an examination of the product by the Council on Pharmacy and Chemistry. (Jour. A. M. A., May 31, 1930, p. 1783.)

THE ACTION OF VITAMIN D

Viosterol administered to animals over long periods in doses 100 times greater than the minimum anti-rachitic level showed no effect on general appearance, growth, reproduction, or resistance to respiratory infections. An overdosage ten times greater was just perceptibly harmful, 4,000 times overdosage definitely injurious, and 40,000 times overdosage strongly toxic. Apparently the harmfulness may be modified by other dietary factors. Recent studies have made it clearer that Vitamin D controls calcification of the skeleton by dissolution and deposition of the bone salts. The mineral content of the bones is the resultant of these two actions. Calcium and phosphorus must be present in the diet in sufficient amounts and in appropriate relationship to each other before proper bone growth or calcification can occur. No amount of vitamin can correct an absolute lack of bone-building salts. (Jour. A. M. A., May 10, 1930, p. 1505.)

A CASE OF TETANY AND EDEMA IN THE NEW BORN*

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TETANY in the new-born infant has not been frequently reported. It is the purpose of this paper to report such a case together with the autopsy findings and in so doing to support the contentions of certain writers that this condition is perhaps not so uncommon as has been thought to be the case.

Kehrer¹ in 1913 reported a series of six cases of tetany in the new-born. The essential characteristics of the picture were spastic contractions of the upper and lower extremities, positive Chvostek and Trousseau phenomena, hyperactive reflexes with frequent ankle clonus, irregular tonic and clonic contractions of the musculature of the face and extremities and, in one case, increased electrical excitability. The muscular spasms were not constant. The slightest disturbance would precipitate them. Cyanosis, especially about the face, was noted in several cases. The hand sometimes assumed a fist position in the spasms while at other times the fingers were extended in typical carpal spasm. The position of the feet was that of the classical pedal spasm. A hard edema was present over the trunk and extremities in two cases. These two were included among the five infants who were afforded prompt relief upon the administration of calcium. One of the series died but it is not indicated in the text whether or not calcium was administered before death.

Von Reuss² does not concur with this author in the diagnosis of tetany of the new born. Grulee³ also, as most of the other writers on the subject,⁴ has taken a similar position. Shannon⁵ on the other hand, agrees with Kehrer and feels that tetany is not extremely uncommon during the new-born period. He has reported several cases in which this group of symptoms occurred in conjunction with a generalized edema of the new-born, both the edema and the nervous manifestations yielding rapidly to therapy directed at the calcium deficiency. In further support of this contention the following case is presented.

The patient, a baby boy, was born October 4, 1929, by normal delivery. On October 6 he developed symptoms which proved to be due to a low grade peritonitis of indeterminate origin. After operation on October 7, he improved rapidly so that by the evening of October 9 he looked very well indeed. During this time he had been receiving some breast milk and a complementary feeding of half milk and half water plus five per cent dextri-maltose. Five hundred and eighty c.c. of .9 per cent NaCl solution had been given by hypodermoclysis from October 6 to 9 inclusive.

Late on the afternoon of October 9, moderate generalized edema was noted. This was much more marked by the morning of October 10. At this time definite nervous symptoms were noted in the patient. They consisted of periodic spasmodic strabismus, spasm of the circumoral muscles giving rise to the pursing or pouting position of the lips, hyperactive reflexes and a condition of general rigidity affecting muscles of the trunk as well as those of the extremities. The position of the feet was that of extension of the foot at the ankle with plantar flexion of the toes. The hands for the most part were clenched tightly in the fist position but at times would assume the obstetrical position. There was a tendency to a flexion of thighs on the abdomen and of the knees on the thighs. The arms were flexed at the elbows. The infant cried out frequently and the least disturbance would give rise to a sudden extension of all four extremities with gradual return to the flexed position described. The Chvostek was definitely positive.

Parathyroid extract, 0.25 c.c., was administered at 11:45 a. m. by hypodermic injection. Ten grains of calcium gluconate in water was ordered at frequent intervals, a total of 55 grains being given throughout the rest of the day. At 5 p. m. the edema and the nervous signs were more marked. At 9:30 p. m. the muscular rigidity had somewhat relaxed and there was a perceptible decrease in the edema. The Chvostek was slightly positive. Slight pursing of the lips still occurred as did also the strabismus, at intervals. The hands were rather stiff. Another 0.25 c.c. of parathyroid extract was given at 10:00 p. m. During this time the patient had nursed and taken the complementary feeding well. His general condition was excellent.

By the morning of October 11, a loss of four ounces in weight had occurred accompanying a marked loss of edema. The patient was very placid, lying in the crib quietly without crying. He took his feedings well. The Chvostek was absent as were also the general rigidity, spasms of the hands and feet, and pursing of the lips. Occasional spasmodic strabismus still oc-

*From the Children's Hospital, Saint Paul. Read before the Minnesota Pathological Society, April 22, 1930.

curred. A total of 50 gr. of calcium gluconate was given throughout the day.

By October 12, a loss of two more ounces in weight had occurred with a further reduction in the edema. The Chvostek was still absent and spasmodic strabismus no longer noted. However, the infant was slightly

toward the side from which the impulse came occurred with each tapping of the cheek. This latter was due to sudden contraction of the neck muscles. The patient was irritable, crying much more than the preceding day. General rigidity was increased and the arms and legs, hands and feet were spastic. The hands were

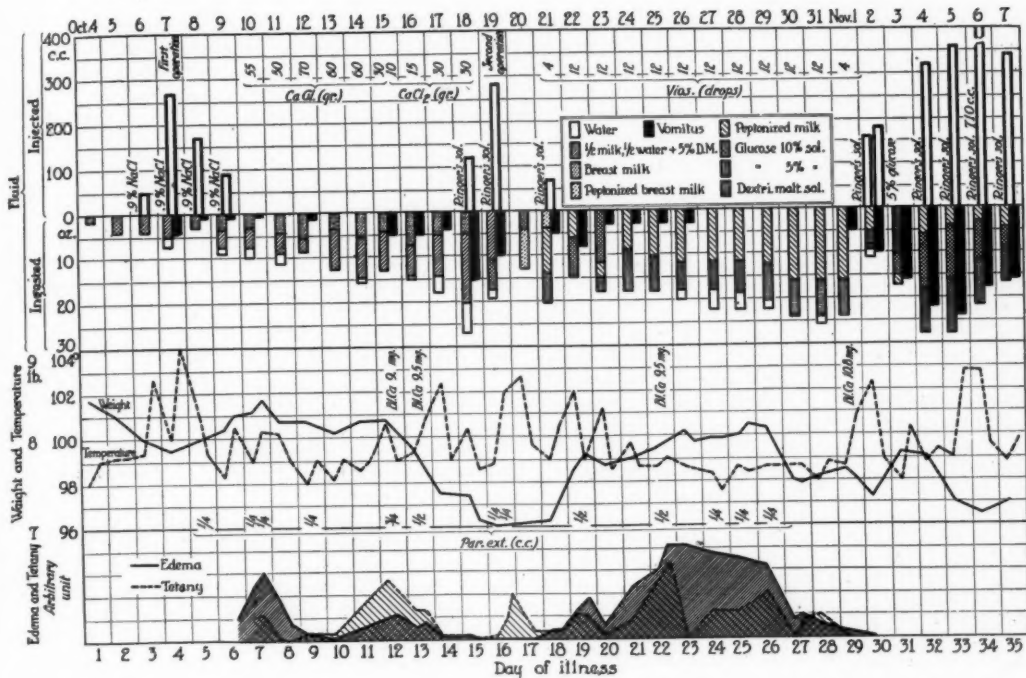


Fig. 1. The chart is for the most part self explanatory, with the exception of the lower tier of shaded areas and certain of the abbreviations. The former constitute a graphic representation of the degree of tetany and edema noted clinically at the various periods of observation. The unit is necessarily arbitrary but the method affords a striking and sufficiently accurate means of picturing what was actually observed. In the upper diagram some of the fluid represented as ingested was really introduced per rectum and similarly some of that recorded as vomited was lost through failure to retain rectal instillations and through intestinal fistulas. Of the abbreviations Ca.Gl. stands for Calcium gluconate, Vios. for viosterol and par. ext. for parathyroid extract (Collip).

more irritable and the knee jerks were definitely increased. The general condition was excellent in spite of the fact that the abdominal skin wound, which had broken open the night before, was wide open and showed no signs of healing. Feedings were taken well. Slight regurgitation was noted. A total of 70 gr. of calcium gluconate was given throughout the day and 0.25 c.c. of parathyroid extract.

By October 13, the edema had almost entirely disappeared. However, the nervous symptoms were slightly increased in that the Chvostek was just demonstrable. A total of 60 grains of calcium gluconate were administered throughout the day. The infant continued to nurse well and appeared in splendid condition.

By the evening of October 14, the edema was definitely increased. Marked increase in nervous symptoms had occurred. The Chvostek was marked. In addition a definite masseter jerk and a jerking of the head

held in a tightly clenched position. The general condition of the patient was very good, although the abdomen was slightly distended and the infant rather constipated, for which enemas were employed. Feedings were well taken, and no vomiting occurred. A total of 60 gr. of calcium gluconate was given throughout the day. Parathyroid extract was purposely withheld.

The next morning (October 15) the edema was slightly increased but very marked increase in nervous symptoms had occurred. The Chvostek, masseter and neck jerks were very marked. General rigidity and spasticity of trunk and extremities was extreme. Carpopedal spasm was present. Spasmodic strabismus was very marked. The patient vomited some at every feeding. Rather obstinate constipation and some distension continued, necessitating frequent enemas. The blood calcium was found to be 9.0 mg. per 100 c.c. Calcium gluconate was discontinued after 30 gr. had

been given and calcium chloride in five grain doses substituted. Three-quarters c.c. of parathyroid extract was administered at 4:20 p. m.

On the morning of October 16, there had been a loss of five ounces in weight with a definite loss in edema. A marked decrease in nervous symptoms had also occurred, the Chvostek being barely discernable and general rigidity and irritability less pronounced. However, spasmodic strabismus was still prominent and reflexes were hyperactive. In general appearance the patient seemed to be comfortable and in good condition. The skin wound was still open, however. Vomiting had occurred frequently during the night after the calcium chloride was given. Blood calcium was found to be 9.5 mg. per 100 c.c. By evening there was an increase in the edema. One half c.c. of parathyroid extract was therefore administered at 8:30 p. m. Calcium chloride had been discontinued since noon because of the vomiting.

By the morning of October 17, a further loss of 7.5 ounces in weight had occurred, with almost complete disappearance of the edema. There remained only an edema of moderate degree over the scrotum. Nervous irritability had entirely disappeared. The Chvostek was absent. Vomiting was much less, the patient having nursed and retained a feeding of 2.5 ounces at a morning feeding. The abdominal wound seemed to be healing to some extent. Thirty gr. of calcium chloride were given during the day.

At the morning visit of October 18, it was found that an abdominal fistula had occurred, apparently involving the upper portion of the small intestine. Considerable loss of ingested fluid occurred through this opening although no vomiting at all occurred. A loss of 1 ounce more had occurred since the preceding day. With it all trace of edema had disappeared. All nervous symptoms of tetany were also absent. The patient took fluids eagerly and nursed vigorously at the breast. One hundred twenty c.c. of Ringer's solution were given by hypodermoclysis.

On the morning of October 19, all signs of edema and tetany were absent. The patient appeared vigorous and active. Ingested fluid and food was coming through the fistulous opening so quickly that it seemed advisable to attempt to close it. This was done. Large amounts of Ringer's solution were given subcutaneously both before and after the operation. Late in the afternoon the general appearance of the patient was good. However, a beginning general rigidity was noted and the Chvostek was positive. No edema was noted. Parathyroid extract (0.25 c.c.) was given. This was repeated at 11:00 p. m. when all nervous symptoms seemed to have increased in severity. Edema was still absent.

The following morning (October 20) the Chvostek was still slightly positive but general rigidity was less marked. Spasmodic strabismus was still present. The Chvostek was slightly demonstrable. By evening the Chvostek was absent and there was no strabismus. Reflexes, however, were rather hyperactive. The calcium had been discontinued since the operation and was never reordered.

On October 21, a slight return of edema was noted in the morning. Nervous symptoms were about the same as the night before. The general condition of the patient was very satisfactory. Viosterol, 2 gtt. per feeding, was ordered on this day. During the night the wound broke open again and discharged a small amount of intestinal contents.

On the morning of the twenty-second the patient was definitely more irritable. He jumped at sudden disturbances, extremities were rigid, and spasticity of the hands and feet was observed. The Chvostek was positive. Parathyroid extract (0.5 c.c.) was given at 10:30 a. m. The edema noted the day before had increased markedly and there had been a corresponding increase in weight of 10 oz. Hypodermoclysis of Ringer's solution had been given during the night and the morning. By evening the edema had increased perceptibly in spite of the parathyroid extract but there was a slight decrease in nervous irritability. The general appearance of the patient at this time was surprisingly good. Slight drainage of intestinal contents into the wound was noted. Moderate vomiting occurred. Temperature had been somewhat elevated during the day.

On the morning of October 23, a very definite decrease in edema had occurred. The Chvostek had disappeared and an accompanying loss of other nervous symptoms was noted. Vomiting was relatively slight. Distension occurred during the day and was relieved by enema.

By the morning of the twenty-fourth a marked increase in the edema had occurred. The Chvostek was present to a slight degree. Throughout the day both edema and nervous irritability increased. October 25 the Chvostek, neck and masseter jerks were very definite, the patient was extremely irritable and spastic, cried a great deal and the edema had increased. The abdominal fistula seemed to be closing, a very small amount of intestinal content coming through on the dressings. Blood calcium at this time was found to be 9.5 mg., so 0.5 c.c. of parathyroid extract was given hypodermically, at 2:45 p. m. Edema and nervous symptoms continued to increase throughout the day.

October 26 the edema was greater than on the morning of the twenty-fifth but less than on the evening of that date. Marked edema was present over the scalp, trunk, scrotum and extremities. That over the thighs, to a less extent over the calves and upper arms, was a hard edema such as has been described in scleredema. This same condition had been noted before in this case and had entirely disappeared under therapy. While such marked edema was still present a very definite decrease in nervous symptoms had occurred. The Chvostek was negative, the patient was placid and not at all irritable, there was no spasticity and reflexes were not hyperactive. The patient was perspiring very freely and, as always when edema was disappearing, was urinating very freely. Constipation was increasing, so petrolagar was ordered. By evening the edema had slightly decreased.

October 27 the edema seemed slightly less but was still very definite, especially the hard edema above noted. Nervous symptoms were increasing in that the

patient was crying and jumpy, and the Chvostek was positive. Reflexes were hyperactive. The patient was, however, eating well and not throwing up. Very slight intestinal drainage was coming through the fistula. Parathyroid extract, 0.25 c.c., was again given on this date.

October 28 the Chvostek was still positive and the edema was about the same. Another 0.25 c.c. of parathyroid extract was administered. On the twenty-ninth slight decrease in edema was noted but otherwise the picture was essentially the same. During this period the infant was eating well, not throwing up and appeared remarkably well except that an obstinate constipation was present, requiring enemas. Again 0.25 c.c. parathyroid extract was given.

By the next day a tremendous change had taken place. The edema had melted away as shown by the loss of 9.5 ounces in weight. All swelling had left the face and scalp. Slight pitting could still be demonstrated over the backs of the hands and dorsum of the feet. The scrotum was still definitely edematous. The hard edema had for the most part left the thighs and remained only in small spots of induration. Together with this loss of subcutaneous fluid there had occurred an almost complete loss of the nervous symptoms of tetany. The Chvostek was negative, the neck and masseter jerks had disappeared, the patient lay quietly in the crib and was not irritable, or jumpy and he did not cry. Reflexes were present but not hyperactive. He took his feedings greedily without vomiting. These were increased to four ounces per feeding in order to satisfy him. As was expected the patient was urinating freely. During the evening and the next day there was a slight increase in nervous symptoms and possibly in the edema, both of which receded rapidly so that both disappeared permanently by November 2, without further treatment than the administration of 12 gr. of viosterol daily.

All day October 31 the patient continued to appear very well. He took his feedings well without vomiting except a very small amount of spilling over after taking his bottle. Practically no drainage occurred from the fistula. He suddenly developed the picture of an acute complete obstruction on the morning of November 1. Tetany or edema did not return. The blood calcium was 10.8 mg. per 100 c.c.

From this time on it was very evident that the patient was fatally ill from the obstructive condition. Measures employed included tube feeding, subcutaneous fluids, transfusions, and finally a third operation without success. The patient finally died, November 11.

At postmortem performed by Dr. K. Ikeda, a generalized plastic peritonitis was found with the intestines matted together in such a manner as to make it difficult to separate them even at autopsy. There were numerous pockets of pus throughout the mass. Spinal fluid calcium was found to be 5.4 mg. Very careful search was made for the parathyroid glands. Only one such structure was found and this was very small, about the size of a pin head. By serial sections two more parathyroids were found. No microscopic abnormality could be detected.

SUMMARY OF CLINICAL FINDINGS

The case then is that of a new-born infant who during a period of illness lasting slightly more than a month presented a group of symptoms which have previously been assumed by at least two writers as indicating a condition of tetany due to deficiency in the calcium metabolism. The underlying illness was a low grade peritonitis which eventually caused death. The symptoms that occurred throughout this illness consisted of certain nervous signs and a generalized edema. These symptoms were amenable to parathyroid and calcium treatment at first temporarily and finally permanently when viosterol was added.

The nervous symptoms were of several types. The first was a general nervous irritability the essential characteristics of which were sleeplessness, restlessness, frequent crying, and a constant primed state, like a coiled spring, which caused all types of slight disturbances to precipitate very much exaggerated responses. Secondly, there were the motor symptoms. These consisted of a general muscular hypertonia of the entire skeletal musculature, and of tonic spasms of the muscles of the arms and hands, legs and feet, and face and eyes. The spasms of muscles of the arms and hands gave rise to a rigid flexion of the forearms at the elbows, which in turn were pressed firmly against the chest, with most frequently a tight clenching of the hands into a fist position. At times the hands were flexed at the wrists with the extended fingers flexed on the palms at the carpophalangeal joints and the thumbs drawn beneath the fingers. The spasms of the legs and foot muscles held the thigh for the most part flexed on the abdomen with the legs tightly flexed at the knees and feet extended at the ankles. Toes were drawn down into extreme plantar flexion. At times the legs were rigidly extended and it was not unusual for the toes to be extended and spread. The positions described as usual for the legs and arms were occasionally interrupted, especially with the occurrence of sudden disturbances, by sudden spastic extension of all four extremities with a slow return to the former position. Spasm of the facial muscles showed itself in occasional grimaces but for the most part by a pursing or pouting position of the lips; that of the eyes by a spasmodic strabismus affecting now one eye and then the other. Clonic spasms were not present in this case.

The third type of nervous irritability was shown by the presence of a markedly positive Chvostek. Trousseau's phenomenon could not be demonstrated with certainty since such spasm as it produces was constantly present. Unfortunately Erb's phenomenon could not be shown because proper apparatus was not available. Still another nervous symptom was noted in the extremely exaggerated reflexes. This was emphasized by the following phenomenon. Each time an attempt was made to elicit a Chvostek, not only did the facial muscles contract but also the masseter muscles suddenly closed the jaw and the neck muscles causing the head to jerk toward the side from which the impulse came.

The edema was mainly a simple edema effecting, in its most marked phases, all of the subcutaneous tissues such as has previously been described.⁵ At times it was more prominent in the dependent parts giving rise to a lop-sided appearance of the various regions. On the other hand certain locations were more subject to its occurrence than others. It occurred earliest and persisted longest in the scrotum, dorsum of the feet and backs of the hands. While for the most part it was a simple pitting edema, on two occasions during the most extreme phases there occurred over the thighs especially and to a less extent over the legs and upper arms a hard edema similar to that described as occurring in scleredema. This pitted deeply but only under firm and continued pressure. As this edema receded under treatment it remained longer in small lumpy areas not in dependent areas.

SUMMARY OF THERAPY

Therapy in this case was of two types; that against the underlying peritonitis and the obstruction resulting therefrom, and that to combat the symptoms of calcium deficiency. The former consisted of breast feeding as long as possible and then the choice of artificial feedings that were thought to be best adapted to the needs of the infant, gastric lavage and gavage when necessary, rectal installations of normal saline and glucose, subcutaneous injections of normal saline and Ringers solution, petrolagar and enemata as obstruction developed, and finally blood transfusions. Reoperations were performed on two occasions by Dr.

Harry Zimmermann in the effort to close fistulas and relieve obstruction.

Treatment of the calcium deficiency consisted of the administration of calcium gluconate and later calcium chloride by mouth, the administration of parathyroid extract (Collip) by hypodermic injections according to the clinical condition and calcium determinations, and finally the administration of viosterol as a reinforcement measure.

DISCUSSION

There are several features in this case which deserve special mention. The Chvostek has been almost universally denied any significant relationship to tetany at this age period. Such has not been the case in this or any other instance of new-born tetany that I have seen. The Chvostek appeared and disappeared along with the other nervous symptoms, very evidently dependent upon the same underlying factors. The fact that it is so very common in the new-born period may very well indicate that temporary failure of the calcium metabolism is indeed very common at this time.

The hard edema which resembles that occurring in scleredema was noted also in Kehr's report. During development it was not noticed to be any different from that which was present over the rest of the body except that it gradually assumed the hard character described. During recession, however, a marked difference was noted in that instead of a gradual uniform disappearance it remained for a longer time in irregularly distributed areas giving rise to a lumpy character of the skin. These remaining areas were not confined to the dependent parts.

The extreme sweating noted at times of active symptoms is commonly found in tetany. Marked diuresis was present during periods of improvement in the edema, as would be expected. This effect on edema in certain cases of nephrosis, nephritis, and cardiac failure has been attributed to the effect of parathyroid extract by Meakins,⁶ Reitzel and Stone,⁷ McCann,⁸ and others.⁹ Hartley has observed similar effects on the edemas of pregnancy.¹⁰ I also have reported it in the edema accompanying tetany of the new-born.⁵ In this condition it would seem to be due to the increase in blood calcium since it also may occur under calcium therapy alone.¹¹

Because of the fear that the first occurrence of edema might have been due to the large amounts of sodium chloride that had been injected under the skin, Ringer's solution was used for further hypodermoclysis. This did not alter the occurrence of edemas as long as the nervous symptoms of tetany persisted. However during the last few days of the infants life when all tetanic manifestations had at last been controlled, very much larger quantities of Ringer's solution were injected without the production of edema. Attention should be called to the fact that permanent disappearance of the tetany occurred only after viosterol was employed.

Blood calcium values deserve special consideration. Unfortunately this determination was not made before treatment was begun. However, in spite of very vigorous treatment preceding the first determination the figure was only 9.00 mg. per 100 c.c. This value alone would perhaps have very little significance but when one considers the relatively tremendous amount of treatment that had been previously employed, it becomes significant indeed. A total of 325 grains of calcium gluconate had been given during the five days preceding. Like dosage to an adult would have been about 53 grams per day. The 0.75 c.c. of parathormone would have been the equivalent of between 13 and 14 c.c. in an adult. That in spite of such vigorous treatment the blood calcium should not be up to normal¹⁸ would strongly support the contention that some deficiency in calcium metabolism was present. The difficulties encountered in establishing a permanent disappearance of the nervous symptoms and the edema is worthy of special mention. Calcium feeding in combination with parathyroid extract produced several periods of temporary improvement. This could not be maintained on calcium alone as shown by the fact that shortly after the parathyroid was stopped the symptoms returned.

Finally calcium was discontinued entirely and viosterol was added in the amount of 12 gtt. daily. The last flare-up occurred shortly after this was started and was controlled by parathyroid extract in addition to the viosterol. The blood calcium at the end of this exacerbation was 10.8 mg. and neither nervous symptoms nor edema returned from that time on. This would suggest that for permanent raising

of the blood calcium the viosterol were the best therapeutic agent. However, the possibility that by this time some deficiency in the body defenses had corrected itself must be considered.

That cases presenting these symptoms might be cases of tetany of the new-born was first mentioned by Kehrer. The nervous symptoms shown by his cases were practically identical with those recorded here. Von Reuss, by refusing to recognize Kehrer's opinions, has been apparently a powerful factor supporting the general idea that tetany is rare or perhaps never exists in infants of this age period. His main argument seems to be that laryngeal spasm was not present or at least not mentioned in this series. Grulec, while a little less dogmatic, still is inclined to disregard Kehrer's report, apparently largely because of the fact that in several of the series other disease was also present. He also states that laryngeal spasm has not so far been recorded in the new-born. He does mention certain hypertonic conditions of the new-born seemingly identical with some of the symptoms recorded in this and Kehrer's cases and considers them as something entirely apart from tetany. Most other writers share the opinions of these men.

The principal arguments against accepting this and Kehrer's cases as true tetany are these: that laryngeal spasm was not shown to be present, that other disease has been present in several instances, that the electrical reactions of tetany have not been shown to be present, that at least a number of the nervous symptoms recorded are relatively common in the new-born and have been considered physiological, and perhaps that the majority of opinion holds that tetany of the new-born does not exist.

As for the first of these arguments is there any sane reason why laryngeal spasm should be demanded as a criterion in tetany of the new-born? True it is common in infantile tetany. On the other hand it is not so frequent in puerile tetany and is rather unusual in adult tetany. To assume that it must be present in tetany of the new-born is to assume that this condition must be identical with infantile tetany, a wholly unfair provision. There is no more good reason for insisting on the presence of laryngeal spasm in tetany of the

new-born than in the adult forms of the disease.

The argument that other disease was present and that therefore the existence of true tetany is to be questioned is also invalid. It is well known that tetany of the infantile period is often brought to light by some intercurrent disease. Falta¹² has mentioned the fact that tetany in older individuals is often brought on by extraneous adverse conditions and Shannon¹¹ has emphasized the importance of accidental disease processes or other constitutional strain in bringing puerile tetany to light. He compared the affect of the parathyroids in tetany in this respect to the function of the pancreas in controlling diabetes. Lisser and Shepardson¹³ also have called attention to this same fact in regard to tetany due to complete removal of the parathyroids during extirpation of the thyroid. The fact that tetany manifests itself more markedly under such adverse circumstances becomes, instead of an argument against, an argument for the existence of tetany during the new-born period, because it emphasizes one more similarity between this and the other recognized forms.

The importance of the electrical reactions must be questioned during this age period since no standard has been established. This is emphasized by the fact that Grulee says that the electrical irritability of the new-born is less than that of older children while von Reuss says exactly the opposite. It is indeed unfortunate that such observations were not possible on the case reported at this time.

The fact that many of the nervous symptoms have been formerly recognized as physiological can be given no credence at all. It is a fact that such symptoms as hypertonia, increased reflexes, clonic movements of the arms on being disturbed and a positive Chvostek reaction may occur in patients who eventually recover without any special form of treatment. However such a fact can not be construed to weaken the importance of observations showing that calcium and parathyroid treatment may accomplish this end quickly.

The fact that general opinion holds that tetany does not exist in the new-born period bears no weight whatsoever since general opinion is so frequently based upon the opinion of one or two outstanding authorities whether they be right or wrong.

On the other hand numerous reasons exist for at least approaching the subject with an open mind. Deficiency of the mechanism controlling calcium metabolism with the resulting symptoms which we are pleased to regard as tetany is not uncommon in older individuals from the period of two or three months on through old age. In fact it is especially common in pregnancy.¹⁰ The inheritive nature of such deficiency is well recognized. I can see no reasonable excuse for assuming that the new-born period should be exempt. In fact there is more excuse for assuming that it might be more prevalent at this time than at any other age period since the traumas incident to birth together with the tremendous upheaval in organic function necessary to continued existence might very well give rise to temporary disarrangements of the body chemistry such as this condition implies. In fact it is my opinion that such is in reality the case. It is indeed interesting, if not significant, that the mother of this infant required calcium therapy to prevent tetanoid manifestations throughout her pregnancy.

The ever present question regarding the relation of parathyroid function to the calcium deficiency in tetany is as pertinent here as in other forms of this disease. That parathyroid deficiency is responsible in the idiopathic forms of tetany of older individuals is almost universally accepted. In the case of infantile tetany the contrary opinion of Howland and Marriott¹⁴ still hinders universal acceptance of such a theory though it is apparently gaining more and more support.¹⁵ Attempts to correlate pathological changes in the parathyroid glands with their apparent deficiency in tetany have been usually unsuccessful whatever the age of the subject and as a result it has been necessary to assume that the failure is a functional one. Similar failure has occurred in this case. So far as is known there was no quantitative or qualitative anatomical deficiency and if we are to hold that the failure of calcium metabolism was of parathyroid origin we must assume that such deficiency was functional in type. This would seem to be the logical opinion to maintain. At the same time it must not be forgotten that the real cause of the symptoms is apparently not the absence of parathyroid secretion but the absence of sufficient active calcium, and that this calcium insuf-

iciency is probably not so much a quantitative as a qualitative thing. It therefore is perfectly possible that factors far removed from the parathyroid secretion, for instance acid-base equilibrium, may depress or otherwise divert the soluble calcium from its usual function as regards this symptom complex. In spite of such possibility, however, the rapid response of the condition to the administration of parathyroid extract makes it most reasonable to assume parathyroid failure as the cause.

CONCLUSIONS

1. Tetany of the new-born has been considered a rare condition.
2. A case of tetany accompanied by generalized edema is herein reported.
3. The symptoms of tetany and edema appeared during the course of a protracted illness due to a low grade peritonitis, this latter eventually causing death.
4. Both the nervous symptoms and the edema were strikingly amenable to therapy calculated to raise the level of the blood calcium.
5. This therapy consisted of calcium gluconate and calcium chloride by mouth, hypodermic administration of parathyroid extract (Collip) and the feeding of viosterol.
6. Temporary relief only followed the use of calcium and parathyroid extract. Permanent disappearance of the tetany and edema did not occur until viosterol feeding was combined with the use of parathyroid extract.
7. Blood calcium values, if not too low to be considered within the normal range, were at least at a consistently low normal level in spite of vigorous treatment until the symptoms of tetany and edema were permanently controlled, when an average normal value was found to be present.
8. It is therefore reasonable to assume that some disturbance of the calcium metabolism existed which resulted in either a qualitative or quantitative calcium deficiency, this in turn giving rise to the symptoms of tetany and edema.
9. By serial sections of tissue obtained at postmortem three parathyroid glands were found in none of which could any microscopic pathology be recognized.
10. If the parathyroid glands are to be held responsible for the calcium deficiency it is thus necessary to assume that the failure of these

glands was functional in nature.

11. Such an explanation for the symptoms of tetany and edema noted in this case is rather favored, though it is fully realized that other internal chemical maladjustments rendering the calcium unavailable for its usual function might also be operative.

The blood calcium determinations and the autopsy in this case were performed by Dr. Kano Ikeda.

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CARBUNCLE OF THE KIDNEY*

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CARBUNCLE of the kidney, or staphylococcal suppurative nephritis, is a rare, but definite, type of renal suppuration, and a clinical entity entirely differentiated from the acute embolic renal infections more commonly seen. It is an acute metastatic lesion similar in origin to perinephritic abscess and acute septic kidney. A recent article by Dick¹ states that he was able to find only twenty-seven cases of this condition reported in the British literature. Several German writers, Reschke,² Nicholich,³ Voss⁴ and others, have written rather extensively of the condition and have propounded various methods for its treatment.

In 1911 Brewer⁵ proved with experimental animals that trauma is an exciting factor in renal infections, particularly in the male patient. The primary focus is usually in the skin, or from acute osteomyelitis.

If carbuncle of the kidney is operated upon early in its course, the lesion is similar to a carbuncle observed in the skin, while later abscesses, either single or multiple, may be found localized in one portion of the kidney or involving the cortex in its entirety. According to Dick,¹ rupture into the kidney pelvis is uncommon, while rupture or extension through the cortex into the perirenal tissues occurs more frequently. The infection is usually unilateral, although Kretschmer⁶ reported one bilateral case which terminated fatally. The onset is insidious, as the primary foci or exciting trauma may be overlooked. Pulmonary and other complications are common and the course of the disease is usually quite stormy unless an early diagnosis is made. These facts are illustrated by the following case.

CASE REPORT

The patient was a male, aged thirty-eight years, who was admitted to Glen Lake Sanatorium on October 3, 1928, for diagnosis and treatment of an active tuberculous lesion of the right lung apex.

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The history of his illness dated from about August 14, 1928, when he developed a furuncle of the skin of the right thigh. The furuncle was lanced by the family physician, who observed the patient for the week following, and then advised him to return to work. After six days, the patient felt so weak and tired that he had to remain at home. The family physician was called again, and upon examining the patient, discovered an unexplained fever. Sequelæ from the furuncle on the thigh were not considered at that time, and although paratyphoid was suspected in addition to tuberculosis, all laboratory tests were negative.

An internist was called in consultation, who examined the patient and requested an x-ray study of the chest. The films revealed an apical tuberculous lesion in the right lung, which was assumed to be active and to be the cause of the patient's nightly temperature of 103 to 104 degrees.

About the middle of September, four weeks after the appearance of the furuncle and two weeks after the appearance of the fever, pus was discovered in the urine. Urinalysis at the onset of the patient's illness had been negative. Examination of the urine for tubercle bacilli was negative. At this time the patient had pain in the lower left chest and left renal area, which was intensified by deep breathing. The pain was still present and slightly increased when he was admitted to the sanatorium, six weeks after the onset of the furuncle.

After admission to the sanatorium on October 3rd, the patient's temperature continued to range from 100 to 103 degrees. Pain was present continuously in the left chest and renal area. The urine contained a trace of albumin, many leukocytes and an occasional red blood cell. Examination of the chest revealed a lesion in the right lung apex which was considered inactive. *The left chest was negative.* Tenderness was complained of upon palpation of the left renal area, although no tumor was felt.

Urologic consultation was requested and we advised x-ray examination of the kidney, ureters and bladder. No abnormal findings were reported. Cystoscopy was done on October 11. The bladder appeared normal through the cystoscope. Both ureters were catheterized without difficulty. Indigocarmine returned in normal time and concentration from both kidneys. The ureter catheters were allowed to remain in place for forty-eight hours for drainage, during which time periodic lavage was done. The ureter catheter specimens showed staphylococcus albus on culture from both sides. There were a few pus cells in both catheterized specimens, with possibly a few more from the left than

from the right. Pycelography was not undertaken at that time.

Following the cystoscopy and the continuous renal pelvis drainage and lavage, there was a drop in the temperature for two days. The usual methods of therapy for renal infections, intravenous and otherwise,

from both ureteral specimens revealed staphylococci, but no tubercle bacilli were found.

The patient's condition grew steadily worse; the pain in the chest was more severe and tenderness and rigidity in the left renal area more marked. An enlarging palpable mass was discovered in the region of



Fig. 1. X-ray showing spine drawn to right; psoas shadow obliterated on left.

were employed without result. The patient continued to complain of increasing pain in the lower left chest and renal area, which was aggravated by deep inspiration. The temperature was present daily and rigidity was noticed in the area of the left kidney, particularly over the back.

A diagnosis of perinephritic abscess with lung complications was made. The patient's condition apparently contraindicated any surgical exploration at that time because the medical consultant observed physical findings in the left base which he assumed were tuberculous, a possible metastasis from the right lung apex. No tubercle bacilli were found in the sputum at any time.

An x-ray examination of the chest on October 29, twenty-six days after the previous x-ray study of the chest and ten days after the first positive physical finding in the left chest, showed the right apex unchanged, but the pleura was thickened over the entire left lung, with evidence of consolidation in the left base.

Urinary symptoms were present and more pus cells were found in the urine. Cystoscopy was repeated on November 12. There was some redness and swelling about the left ureteral meatus, but otherwise the bladder was negative. A pycelogram was made of the left side. This was not normal and was interpreted as an acute pyelonephritis. Stained specimens and cultures

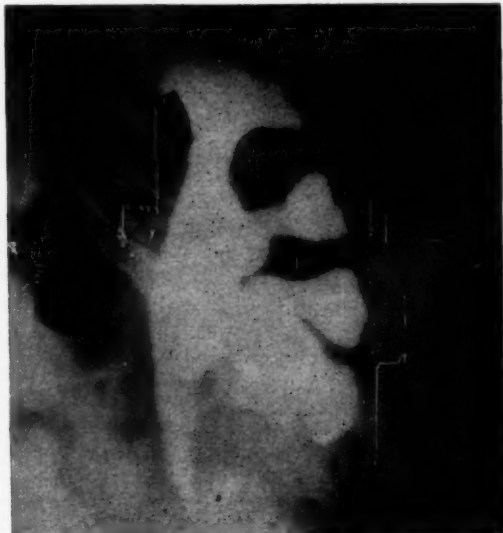


Fig. 2. Left pycelogram showing dilatation of minor calyces and broadening of isthmus of all calyces.

the left kidney which was thought to be a renal or perirenal abscess. Operative interference was again discussed, but rejected because of the condition of the patient.

On December 15 another X-ray examination of the chest was made. The shadow seen on the left side was smaller than previously reported. Since no tubercle bacilli were found in the sputum, the left pulmonary lesion was thought to be a metastasis from the left renal fossa.

Eventually we obtained a positive guinea pig reaction from the patient's bowel contents, which were thought to be inoculated by the swallowing of tubercle bacilli from the sputum. This was interpreted as evidence of pulmonary activity. Since the lung lesion in the left chest had not proved to be tuberculous in origin, and since lung complications are quite commonly the result of perinephritic infection, we again suggested exploration of the left renal area.

This was undertaken January 2, 1929. About one-half litre of thick, purulent material was evacuated as soon as the deep fascial plane was incised. One large abscess cavity was carefully explored, but a suppurative kidney was not identified. Drains were placed and the wound closed. The purulent material from the abscess cavity contained no tubercle bacilli, but pure cultures of staphylococcus albus were obtained. Large amounts of purulent material continued to drain from the wound for ten days. The patient's condition improved slightly, but his temperature still ranged from

103 to 103.5 degrees. The urine continued to show numerous pus cells and the white blood count was 20,900.

Nephrectomy was performed on January 12. The kidney was found to lie within a dense, adherent, fibrous envelope. This mass could not be delivered



Fig. 3. External surface of operative specimen, showing abscess and portion of detached renal tissue.

through the wound, as we could discover no cleavage line. After much dissection, the true renal capsule was reached. In doing this, a piece of renal tissue about the size and shape of a cherry freed itself from the kidney mass and fell loose in the wound. This was identified as a bit of sloughed renal tissue from one of the abscesses. The hole in the kidney cortex, produced by this sloughing mass, did not bleed. The true capsule was dissected away from the kidney and a sub-capsular nephrectomy was done. The pedicle was so large that ligation en masse was not possible. A renal pedicle clamp was left in place and sufficed as a drain. The removed kidney was almost entirely replaced by abscess cavities and necrotic tissue.

After nephrectomy, the patient's condition was so critical that continuous supportive measures were necessary. The wound continued to drain for a considerable time after operation. The temperature continued to range from 101 to 102.5 degrees. The urine finally began to show a decrease in pus cells and albumin. The patient's condition improved steadily and drainage gradually ceased. He was discharged from the sanatorium, temperature-free, on April 1, 1929, six months after admission. The last urine specimen examined contained two to four leukocytes per high power field.

Pus persisted in the urine specimens during the presence of the known prostatic infection and it is therefore a matter of conjecture whether or not the remaining kidney is infected or contains a destructive process. The urological tract has not been rechecked and subsequent events will have to be followed in order to establish the soundness of the remaining kidney.

PATHOLOGIC FINDINGS

Gross Findings.—The kidney was much larger than normal. There were petechial hemorrhages in the renal cortex which could be seen on the surface. The renal cortex was obliterated by multiple abscesses con-



Fig. 4. Bisected operative specimen, showing multiple abscesses throughout.

taining thick pus and necrotic material. One abscess in the mid-portion had ruptured through to the capsular surface of the kidney.

Microscopic Findings.—The capsule was partly destroyed and slightly infiltrated with lymphocytes and polymorphonuclear leukocytes. There were several small subcapsular hemorrhagic areas. The renal cortex showed marked proliferation of connective tissue elements and exudative reaction. There was a very marked infiltration with lymphocytes, polymorphonuclear leukocytes and plasma cells and there were numerous multilocular cortical abscesses well walled off. There were numerous hyaline glomeruli, several of which were atrophic and others obscured by polymorphonuclear and lymphocytic infiltration. The tubules showed the lumina filled with hyaline material and some pus, and the tubule cells were frequently hydropic.

Pathologic Diagnosis.—Acute suppurative pyelonephritis.

SYMPTOMATOLOGY

For convenience, the symptomatology of carbuncle of the kidney may be classified as general, local and urinary.

General Symptoms.—Chills and fever may be constant or intermittent, usually ranging from 100 to 104 degrees. Malaise, headache and the common symptoms of sepsis, together with leukocytosis, are present. These are always accom-

panied by increasing weakness of the patient, in spite of symptomatic treatment.

Local Symptoms.—Pain is of varying degree early in the course of the disease, but later becomes constant in the affected side. The pain may be in the chest of the affected side, due to reference or actual pulmonary extension, and is increased on deep respiration. Localized tenderness and rigidity on the affected side increase with the progress of the lesion. A tumor mass may or may not be present, although late in the course of the disease it is always present in the average individual.

Urinary Symptoms.—Urinary symptoms may be insignificant or absent. Examination of the urine may be negative early in the course of the disease, while minor urinary findings may be constant throughout. Rupture of the carbuncle into the renal pelvis results in exceedingly large amounts of pus, blood, bacteria and necrotic material in the urine. Urine from the affected side may be sterile before this occurs.

DIAGNOSIS

A careful and thorough history is of the utmost importance in establishing the diagnosis. If the clinician finds a patient between twenty and sixty years of age, who is toxic, with increasing weakness and a history of direct or indirect trauma over the kidney area on either side, he should be on the alert for a suppurating lesion in the kidney. A history of felon, carbuncle, furuncle, acute osteomyelitis, or infected eczematoid lesions, should remind the clinician of the possibility that these infections may metastasize to the renal or perirenal tissues. Pain in the chest with fixation of the diaphragm may lead to a suspicion of pneumonia, pleurisy or other pulmonary pathology. It must be remembered that the urinary symptoms may be very insignificant early in the disease and are therefore likely to draw the attention of the diagnostician away from the urinary tract.

In the later stages of the condition, constant pain, tenderness and rigidity, together with increased urinary findings and the palpation of a tumor mass, render the diagnosis obvious, especially if the patient has been toxic for many days. Leukocytosis is usually high and constant, from 10,000 to 30,000 cells per cu. mm., while the temperature ranges from 100 to 104 degrees.

When rupture of the lesion into the kidney pelvis has occurred, the pyelogram may make the diagnosis. In cases where rupture has not occurred, the pyelogram may be an invaluable aid in ruling out other pathologic conditions of the kidney. The differential diagnosis between carbuncle of the kidney and acute septic or embolic kidney may be very difficult and in many cases impossible.

Bacteriologic studies of the urine by culture may be a valuable aid in the establishment of the specific causative organism, which is usually a staphylococcus of the hemolytic type. Mixed infection may render this finding valueless or misleading.

TREATMENT

Great care should be exercised in the surgical treatment of perinephritic abscess, in order that a primary suppurative process in the kidney may not be overlooked.

Nephrectomy is the treatment preferred by the majority of the writers on the subject, and it has been recommended by Kretschmer, Voss, Barth, Israel and others. The operation should be performed as soon as the diagnosis is established. In many cases of long-standing suppuration, the drainage of a perinephritic abscess with secondary nephrectomy may be necessary, as governed by the condition of the patient. It is possible that many cases of perinephritic abscess in which nephrectomy is necessary eventually, are cases in which the diagnosis of the primary site of suppuration was originally overlooked.

In cases where the suppurating area in the kidney is small, partial resection of the affected portion of the kidney has been recommended by some writers, notably by Reschke.² Decapsulation of the organ has been recommended by Nicolich³ in some types of cases.

This patient has been undergoing prostatic massage for a chronic prostatic infection which contains staphylococci. He has had a recurrence of boils in the skin of his back, but his general conditions has improved so that he is able to attend to his usual duties better than at any time during his life.

CONCLUSIONS

Our study of this case and our review of the literature has taught us the following facts:

1. The presence of a felon, carbuncle, furuncle

cle, acute osteomyelitis or infected eczematoid lesion may produce an acute metastatic lesion in one or both kidneys. Complete rest and careful treatment of these foci, together with protection of the kidneys from trauma, may prevent carbuncle of the kidney.

2. The possibility of a renal lesion must be considered when temperature, malaise or prostration follows the severe infections mentioned above.

3. Urinary symptoms and findings may be negative.

4. In spite of evidence of other disease, an acute kidney infection must be expected following such severe infections as those mentioned above.

5. Lung complications are no contraindication to operative treatment, but are quickly relieved because they are the result of metastasis from the kidney.

6. Nephrectomy is always necessary; whether it should be a one- or two-stage operation will depend on the condition of the patient.

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PLASMOCHIN

"Plasmochin Compound" is stated by the manufacturer to be "sugar coated pills containing 0.01 Gm. of Plasmochin and 0.125 Gm. of quinine sulphate." The only way in which Plasmochin may be characterized as "extremely dangerous" is that its safe (but efficient) dose is much smaller than that of quinine. Its most important untoward effect is cyanosis due to methemoglobin formation. Abdominal pains have also been produced by it. It is liable to cause the symptoms of cinchonism, such as tinnitus and dizziness; and it has been charged with favoring the occurrence of black-water fever. The Council on Pharmacy and Chemistry published a preliminary report on Plasmochin in 1927, when the product was not being marketed in this country. Now the Winthrop Chemical Company markets "Plasmochin Compound" but has not taken steps to make this preparation accepted for New and Non-official Remedies. (*Jour. A. M. A.*, May 3, 1930, p. 1429.)

THE SEAL OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE COMMITTEE ON FOODS

The seal may be used in advertising in circulars and on packages after acceptance of the product is announced. The seal, if it appears on the package, must be the only seal of such character and must not appear in conjunction with the seals of any other investigative organization. The seal is to be used without any comment by the advertisers, unless such comment has been submitted to the Council or the Committee and approved by them. Should the product, for any reason, become unacceptable, all use of the seal must be discontinued within six months. Only the seal authorized by the body accepting the product shall be used in advertising the product. Products exempted by either the Council or the Committee shall be permitted to be advertised in publications of the American Medical Association but the use of the seal shall not be granted in connection with such advertising. (*Jour. A. M. A.*, May 3, 1930, p. 1407.)

DISTANT METASTASIS IN CARCINOMA OF THE CERVIX OF THE UTERUS*

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IN treatment by irradiation of carcinoma of the uterine cervix or fundus, the attention of the radiologist is confined, as a rule, solely to treatment at the primary site of the disease and to direct pelvic extension or local metastasis. This practice undoubtedly has arisen from the assumption that distant metastasis is rare or that it occurs only in the terminal stages of the disease, when intensive treatment is contra-indicated. Occasionally, however, one encounters the necessity of advising treatment for a patient with complete arrest of the pelvic disease, but with evidence of distant metastasis. I have not found reports in medical literature dealing with the question of the radiosensitivity of such metastatic deposits, although the amenability of the primary carcinoma to irradiation is well recognized. The remission of extensive metastasis from testicular tumors under appropriate irradiation has been frequently reported. Leddy recently emphasized the radiosensitivity of the metastatic deposits in bones from carcinoma of the breast. The favorable response of metastasis from carcinoma of the thyroid gland likewise is recognized; even metastatic deposits in the lungs and mediastinum have disappeared under treatment. The present study was undertaken to determine, if possible, the prognostic importance of distant metastasis in cases of carcinoma of the cervix and to assemble the data available as to their reaction under treatment.

From 564 postmortem examinations in cases in which carcinoma of the cervix was present, Albers Schonberg reported metastasis in the following frequency: in the liver, 13.7 per cent; in the lung, 4.07 per cent; in the peritoneum, 7.44 per cent; in the pleura, 1.95 per cent; in the kidney, 1.77 per cent; in the spleen, 1.24 per cent; in bones other than the skull, 0.83 per cent; in the heart, 0.7 per cent; in the pancreas 0.35 per cent, and in the thyroid gland, stomach, suprarenal glands, skull and dura mater, muscles, and mammae, 0.17 per cent (one instance each). Feil-

chenfeld reported metastasis to distant organs in 28.2 per cent of a series of cases; 15.4 per cent of the metastatic growths were in the lungs and liver. No one else has given as high a percentage of metastasis to the lung. Reichelman, in eighty-six cases, found metastasis in forty-nine; the liver was involved in 15.1 per cent of the cases, and the lungs in 4.6 per cent. That the regional lymph nodes lead in frequency as the site of metastasis, and that they are involved relatively early, is indicated by the fact that Wertheim found them involved in approximately 35 per cent of cases in which the primary lesion was operable.

Macallum stated that adenocarcinoma of the uterus developing from the tubular glands of the fundus uteri or from the more complex glands of the cervix, grows slowly in contrast to epithelioma of the cervix. In adenocarcinoma, metastasis is slow, but nodules do appear in retroperitoneal lymph nodes. There are a few cases in which the secondary growths are widely disseminated, and involve peritoneum, liver and other organs.

TABLE 1
INCIDENCE FOUND AT NECROPSY OF DISTANT METASTASIS FROM CARCINOMA OF UTERINE CERVIX (WERTHEIMER)

	Incidence of metastasis in various organs, per cent*	
	Irradiated (54 cases)**	Not irradiated (50 cases)**
Lungs	11.0	16
Liver	25.9	14
Spleen		4
Suprarenal glands	1.85	2
Heart	1.85	
Bones	1.85	2

*The brain was not examined. Metastasis in some organs which Wertheimer did examine is not reproduced here.

**Distant metastasis was present in 28 of the 54 patients (51.85 per cent) and in 27 of the 50 patients (54.0 per cent).

*From the Section on Therapeutic Radiology, the Mayo Clinic, Rochester, Minnesota. Submitted for publication May 15, 1930.

TABLE 2
SUMMARY OF DATA IN CASES IN WHICH PULMONARY METASTASIS TOOK PLACE
FROM CARCINOMA OF THE CERVIX OF THE UTERUS

Case	Age, years	Type of carcinoma	Duration and extent of disease prior to discovery of pulmonary involvement	Symptoms referable to pulmonary involvement	Report of roentgenographic examination of thorax	Treatment after admission to clinic	Duration of life after diagnosis of thoracic metastasis
1	55	No biopsy	Hysterectomy one year before, extensive pelvic recurrence	Nonproductive cough	Diffuse involvement, miliary type, both lungs	None to thorax, treatment to pelvis for relief of pain	Died within one month
2	48	Squamous-cell epithelioma, graded 4	Six years, metastasis to both tibiae	None	Multiple regions of metastasis	None to thorax, treatment of regions of skeletal metastasis	Died three months later
3	38	Squamous-cell epithelioma, graded 4	Six months, under treatment for three months with satisfactory arrest of pelvic disease	Sharp pain under right scapoid, dry cough four months before diagnosis	Multiple regions of metastasis, both lungs	High-voltage roentgen rays to thorax	Died three months later
4	24	No pathologic report available	Carcinoma of cervix for five years, radium treatment elsewhere	Nonproductive cough	Multiple regions of metastasis on right side	None	Died in eleven months
5	32	Squamous-cell epithelioma, graded 4	Almost two years, under radium and roentgen-ray treatment second year, fairly well controlled	Dry, irritating cough and dyspnea for one month	Multiple regions of metastasis, both lungs	High-voltage roentgen rays to thorax for palliation	Died in about eight months
6	41	Adenocarcinoma, graded 4, with regions of colloid	Nine months, radium treatment elsewhere, cervical and supra-clavicular nodes involved, massive pelvic involvement	Loss of weight and strength, breathlessness and palpitation	Multiple regions of metastasis	High-voltage roentgen rays to thorax for palliation	Died in about eight months
7	47	Squamous-cell epithelioma graded 2	One and a half years, under treatment at clinic six months, increasing pain	None	Multiple regions of metastasis, both lungs	None to thorax, treatment to pelvis for relief of pain	Died one month later
8	54	Papillary adenocarcinoma, graded 2	Two and a half years, hysterectomy in June, 1929, no extension beyond uterus and cervix noted at operation	None	November, 1929, multiple regions of metastasis in lungs	None to thorax, treatment for skeletal metastasis	No report
9	60	Carcinoma of fundus	Hysterectomy two years and eight months before	Cough of increasing severity, dyspnea after two months	Massive nodes at left hilum and left middle region of thorax, fluid at left base	High-voltage roentgen rays to thorax for palliation, treatment interrupted on account of reaction	Died two months later

TABLE 2—Continued
SUMMARY OF DATA IN CASES IN WHICH PULMONARY METASTASIS TOOK PLACE FROM CARCINOMA OF THE CERVIX OF THE UTERUS

10	49	Squamous-cell epithelioma, graded 3	One year and six months, under treatment by radium and roentgen rays, made some improvement, then pelvic disease again became active, cachexia	Chronic cough, not distressing	Metastasis in left lung	None to thorax	Alive three months later, in poor condition
11	52	Papillary adenocarci- noma, graded 3	Two years six months, moderately advanced, under treatment by ra- dium and roentgen rays became quiescent for over one year, then recurred	Weakness, no cough. Has had colds during winter	Extensive metastasis both lungs	None to thorax	Alive three months later, in poor condition
12	39	Squamous-cell epithelioma, graded 3	Two years, one year under treat- ment, with temporary arrest	None	Multiple regions of metastasis	None	Died six months later
13	56	Adenocarci- noma graded 3	Two years, satisfactory arrest of pelvic disease in last six months after radiotherapy	Dry cough recently lasting only one week	Multiple regions me- tastasis, both lungs	None	Alive one month later

In the early period of radiotherapy some apprehension was expressed that irradiation would increase the frequency of carcinomatous metastasis to distant organs. This view was expressed by Prochowneck, who noted the extreme rarity of these conditions after surgical treatment. Adler, in his monograph on radium therapy, stated that with the rarity of regional metastasis, and especially of metastasis to distant parts of the body in cases of carcinoma of the cervix, the relative frequency of them under radium treatment is doubly striking. He considered this fact as undoubtedly directly attributable to the influence of the radium treatment; the periphery of the tumor had received too little irradiation and, as a result, had become especially prone to proliferation. This idea of a stimulative effect from inadequate irradiation has been thoroughly refuted. Wertheimer has compared results of a series of postmortem examinations in cases in which irradiation was done with results in a series in which irradiation was not carried out. Her figures are given in Table 1.

For the purpose of this study the incidence of metastasis found at necropsy is of less significance than the incidence of such lesions noted in clinical examinations during the period when, on the basis of the pelvic disease and the patient's general condition, radiotherapy is warranted either for palliation or in an attempt to arrest or cure the malignant process. A review of a large number of cases has convinced me that such data would be extremely unreliable unless roentgenographic examinations were included at each examination, and great care was taken in recording negative data. Dyspnea of moderate degree is a common complaint in this disease, is most often the result of anemia and weakness, and by most clinicians is not considered suggestive of pulmonary metastasis. Analysis of symptoms in cases of pulmonary metastasis (Table 2) shows that a nonproductive cough is the most common feature but that often it is not sufficiently annoying for the patient to mention it unless she is questioned directly. The patient with even extensive metastasis may be entirely unaware of any respiratory distress. A small series of twenty-five necropsies in cases of carcinoma of the cervix performed at The Mayo Clinic includes two cases of pulmonary metastasis, neither of which had been detected in the clinical examination. In one case, roentgenogram of the lungs

TABLE 3
SUMMARY OF DATA IN CASES IN WHICH SKELETAL METASTASIS TOOK PLACE FROM
CARCINOMA OF THE CERVIX OF THE UTERUS

Case	Age, years	Type of carcinoma	Duration and extent of disease prior to discovery of skeletal involvement	Treatment previous to occurrence of metastasis and result of treatment	Symptoms of metastasis to bones	Report of roentgenographic examination	Treatment of metastasis	Effect of treatment, if any	Subsequent treatment and effect	Duration of life after diagnosis of skeletal metastasis
1	54	Papillary adenoma, of uterus and cervix, graded 2	2.5 years	Hysterectomy four months before, no pelvic recurrence	Pain in left leg and knee	Destruction of inner condyle of left femur	Moderate-voltage roentgen ray to knee	Definite relief of pain for short period, pain returned with diathermy	Moderate-voltage roentgen ray one month after diagnosed previous treatment, no effect to time of dismissal	No report (thoracic metastasis diagnosed at last observation)
2	56	Adenocarcinoma	Extensive carcinoma of cervix 3.5 years before	Radium and roentgen rays, complete relief of symptoms, massive pelvic recurrence	Swelling of legs	Multiple regions of rarefaction in right ilium, probably metastasis	High-voltage roentgen rays	Great palliation immediately which continued over 3 months		Died 4 months later
3	48	Squamous-cell epithelioma, graded 4	6 months extensive pelvic disease	Radium and roentgen rays 2 months before with marked improvement	Pain in right leg below the knee	November, 1925, region of destruction in right tibia, February, 1926, region of destruction in tibia larger and metastasis in lower third of left femur and left tibia, January, 1926, pulmonary metastasis noted	November, 1925, moderate-voltage roentgen rays to right tibia	Decided relief of pain but no retardation in development of metastasis	January, 1926 moderate-voltage roentgen rays	Died 5 months later
4	59	Adenocarcinoma graded 3	10 years	Amputation of cervix, 1919, total hysterectomy for recurrent carcinoma of cervix 1921, prophylactic treatment by radium and roentgen rays, no pelvic recurrence	Stiffness of right knee and edema of right leg, severe pain	Region of destruction in right ilium, also palpable mass attached to inner surface of ilium	March, 1929, high-voltage roentgen rays to pelvis	Edema reduced, pain less	May, 1929, no roentgenographic change in region of destruction	October, 1929, very poor condition
5	65	No data	Advanced disease, duration unknown	2.75 years; radium and roentgen rays two years before	Indefinite pain in back and pelvis interfering with walking or climbing stairs, supraclavicular nodes involved	Region of destruction in right ilium	High-voltage roentgen rays for relief of pain, treatment to cervical nodes	Complete relief for 3 months	None	No later report

Case	Age, years	Type of carcinoma	Duration and extent of disease prior to discovery of skeletal involvement	Treatment previous to occurrence of metastasis and result of treatment	Symptoms of metastasis to bones	Report of roentgenographic examination	Treatment of metastasis	Effect of treatment, if any	Subsequent treatment and effect	Duration of life after diagnosis of skeletal metastasis
6	53	Squamous cell epithelioma, graded 3	Extensive inoperable carcinoma of cervix	Two courses of radium and roentgen ray with complete arrest of pelvic disease	Pain in buttock on sitting, atrophy of muscles of left leg	Destruction of most of the acetabulum (roentgenographic examination negative)	High-voltage roentgen rays	Some transient relief during treatment	Further treatment considered inadvisable	No report

				Squamous-cell epithelioma, graded 3	Extensive inoperable carcinoma of cervix, 6 months	Two courses of radium and roentgen ray with complete arrest of pelvic disease	Pain in buttock on sitting, atrophy of muscles of left leg	Destruction of most of the acetabulum (roentgenographic examination negative one month earlier)	High-voltage roentgen rays	Some transient relief during treatment	Further treatment considered inadvisable	No report
6	53											
7	68			Squamous-cell epithelioma, graded 4	2 years extensive carcinoma of cervix	Treatment by roentgen rays elsewhere	Severe pain in right leg, relieved by treatment by roentgen rays elsewhere but patient unable to use leg	Large region of metastasis in greater trochanter and shaft of right femur	High-voltage roentgen rays and radium	Not reported	None	Lived 6 months
8	46			Squamous-cell epithelioma, graded 4	6 months	Total hysterectomy, vaginal fistula repaired	Throbbing pain in head, also pain in right leg and back 9 months after operation	Metastasis in skull; lumbar part of spinal column, pelvis and thorax negative	None	Rapid increase in regions of destruction in skull in 1 month	None	No report
9	53			Squamous-cell epithelioma, graded 4	3 years	Hysterectomy	Pain in hips and back starting soon after operation, increasing in severity for three months to time of observation	Small region of destruction in fourth lumbar vertebra and furring of disk, possibly tuberculous	Radium needles to small re-current growth	No report	None	No report
10	54			No data	10 months carcinoma of uterus with vaginal involvement	None	Severe backache	Complete destruction of ramus of right pubic bone	None	None	None	Unknown
11	44			Squamous-cell epithelioma, graded 3	1 year, 3 months	Cautery to cervix, vaginal hysterectomy, postoperative radium and roentgen rays	Constant ache in hips and back starting 1 year after operation	Destruction of lumbar vertebrae, second, third and fourth, diagnosed 4 months after onset of pain	None	None	None	Unknown
12	49			No biopsy	4.5 years (very extensive pelvic disease when first examined)	Radium and roentgen rays with 4 years arrest of disease	Pain in left hip	Extensive destruction in right ilium (8 months after onset of pain)	None	None	None	Died 5 months later
13	59			No biopsy	Moderately advanced pelvic disease symptoms for 5 months	Radium and roentgen rays	Pain in right ankle, with swelling 3 months after treatment	Metastasis in lower third of right tibia	None	None	None	Died 6 months later
14	60			Carcinoma of fundus	2 years 8 months	Hysterectomy	Pathologic fracture first symptom	Destructive lesion in right femur with pathologic fracture	None			Died 2 months later

had not been made; in the other case, the roentgenogram taken one month before death failed to reveal the lesion.

Severe and often intractable pain in the lumbar or sacral regions radiating into the legs is one of the most common symptoms in advanced carcinoma of the cervix. This is usually attributed to impingement on the sciatic nerve or the lumbar plexus, or to compression of the ureters with resultant hydronephrosis. The clinician or radiologist rarely seems to make an effort to determine the exact origin of the pain.

In a study of twenty-four patients with uterine carcinomas, thirteen of whom had metastasis to the lungs, and fourteen metastasis to the bones, I have indicated the stage of the disease at which metastasis was recognized, the type of malignancy in each case, and the significant symptoms and their severity.

Data concerning the cases in which pulmonary metastasis took place are given in Table 2. Metastasis of both adenocarcinoma and squamous-cell epithelioma took place, with malignant characteristics graded from 2 to 4, according to the classification of Broders. There was satisfactory eradication or control of the pelvic disease by either surgical or radiotherapeutic treatment in four cases; in the others, active carcinoma was present in the pelvis. The freedom from distressing symptoms in the majority of cases of the group is especially notable, and indicates the probability of overlooking secondary growths, except through roentgenographic examinations made as a routine. Three patients in whom pulmonary metastasis has been discovered recently are living. The remainder died in from one month to eleven months after the pulmonary lesions were detected. In only three cases (treatment was abandoned in a fourth case because of reaction) was any attempt made to arrest the development of the pulmonary growth by irradiation, and in these cases, through accidental circumstances, there has not been an opportunity to trace the result of such treatment by later roentgenographic or clinical study. When there is evidence of rapid dissemination of the carcinoma, with general cachexia, the radiologist is scarcely justified in applying extensive radiotherapy. Probably only rarely will a patient be found who is in good general condition, with other manifestations of disease in satisfactory control, for whom a trial of intensive irradiation for pulmonary metastasis is warranted. In such cases,

from the radiologist's point of view, treatment should be pushed energetically until sufficient experience has proved or disproved the possibility of influencing the development of pulmonary invasion in this type of carcinoma.

In Table 3 is presented a summary of clinical data in regard to the fourteen cases in which metastasis to bone took place. Pain seems to be an invariable symptom of this form of metastasis, but with concomitant adnexal infiltration, the causative factor underlying the pain may be in doubt. Malignant deposits in the lower extremities had been regarded as infectious destructive processes in two instances, and their malignant nature was recognized only as the disease became manifest elsewhere. In one instance, destruction of the right ilium occurred ten years after hysterectomy for the primary disease, with no evidence of local recurrence. Palliation has resulted from radiotherapy in some instances, although there are often complicating factors to consider in explanation of the relief of pain. In the few cases concerning which we can form an opinion, the relief of pain has seemed to be less definite and prolonged than that experienced in the treatment of metastasis to bone from carcinoma of the breast.

CONCLUSIONS

1. Metastasis to distant regions, from carcinoma of the cervix and fundus of the uterus, occurs more frequently than is ordinarily assumed.
2. Pulmonary metastasis often is not accompanied by distressing symptoms, so that only by frequent roentgenographic examination is it detected in the early stages.
3. The presence of metastasis in bones often is overlooked because of complicating circumstances which may account for pain. Metastasis to the extremities or skull often is mistakenly attributed to inflammatory destructive lesions.
4. Some relief of pain may be secured by effective irradiation of metastatic growths in bone from carcinoma of the uterus. This response seems less definite and less prolonged than that obtained in secondary growths from carcinoma of the breast.
5. There are not sufficient clinical data to warrant an opinion as to the radiosensitivity of pulmonary metastasis from uterine carcinoma. From the standpoint of greater precision in the application of radiotherapy a fair trial of such treatment in well selected cases should be made.

CASE REPORT

PULMONARY ASBESTOSIS: REPORT OF A CASE*

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Interest in the injury to the lungs produced by the inhalation of asbestos dust has been aroused in the last six years, and several reports of cases have appeared in the medical literature of Great Britain. Aside from an occasional editorial or incidental mention, little has been written in this country about the condition. Apparently this is the first case reported from the United States. Nevertheless asbestos is mined or manufactured in many portions of this country. Undoubtedly injury to the lungs of some of these numerous workers has occurred, and may have been directly or indirectly responsible for death without the real condition being recognized. This case is reported in the hope of arousing more widespread interest in the disease and establishing it as an entity with which American physicians surely will have to deal.

REPORT OF CASE

A man, aged fifty-eight years, came to The Mayo Clinic May 26, 1929, in extremis, suffering from cardiac disease. He was taken to the hospital immediately on his arrival, and such studies were made of the disease as his condition permitted. Not a great deal was then known of his earlier history except that as a boy he had travelled the seven seas with his grandfather, who was a sea captain. He lived well and drank heavily during this period of his life. For a number of years he remained in the tropics, and finally, in 1898, contracted yellow fever. After recovery from this disease he returned to the United States and engaged in various enterprises, among others, the manufacture of brick. Subsequently, it was ascertained that the patient had been working in South America from 1911 to 1913; the significance of this fact will appear later. Aside from the illness due to yellow fever, he was thought to have been in good health until 1924, when he had an attack of dyspnea, with mild, but increasingly severe, congestive heart failure. Five distinct attacks, characterized by these same symptoms, had been experienced before the last seizure, which occurred in December, 1928, following a type of respiratory infection called influenza.

General examination revealed that there was dyspnea, cyanosis, and congestion of the lungs. The systolic blood pressure was recorded as 160 mm. of mercury, and the diastolic pressure, as 110 mm. The heart was enlarged, and there was a systolic murmur at the apex.

Ascites and edema of dependent portions were present, and the liver was large and tender. Examination of the ocular fundi disclosed sclerosis of the retinal arteries, of the hypertensive type, with two small hemorrhages in the retina. Roentgenologic examination of the thorax gave evidence of an enlarged heart, and of passive congestion of the lungs. This plate, however, was taken in the hospital and was not satisfactory for further analysis of the condition of the lungs. Electrocardiographic examination gave evidence of complete heart block.

During the patient's stay in the hospital he failed rapidly and dyspnea, cyanosis, and edema increased. The pulse became very irregular and manifested auricular fibrillation. There was venous congestion in the neck. Venesection was performed twice, and salyrgan, 1 c.c., was given intramuscularly once, and just before death by vein. The patient died two days after he entered the hospital. The clinical diagnosis was hypertensive cardiac disease of five years' duration, cardiac hypertrophy with congestive failure, of five months' duration, and complete heart block.

An abstract of observations at necropsy includes the following points of significance. The abdomen contained 4,000 c.c. of clear, straw-colored fluid. There were 300 c.c. of a similar fluid in each pleural cavity, and the pericardium contained 200 c.c. The heart weighed 600 gm.; the myocardium was yellowish pink, and beneath the epicardium were a few petechial hemorrhages. The consistence of the muscle was firm, and the surface presented a moderate amount of streaking. The coronary arteries were slightly sclerosed. The measurements of the heart were as follows: aortic valve ring, 7.0 cm.; mitral valve ring, 11.0 cm.; tricuspid valve ring, 14.0 cm.; pulmonic valve ring, 7.0 cm.; thickness of left ventricle, 1.8 cm.; depth of left ventricle, 6.0 cm.; thickness of right ventricle, 0.5 cm., and depth of right ventricle, 10.0 cm.

There were interlobar adhesions of the left lung, and the anterior surface of the lower lobe was covered with fibrous adhesions. Both lobes were grayish-brown and mottled, with anthracosis, marginal emphysema, and apical scarring. The consistence of the tissue of the lung was markedly increased. On the cut surface the color was recorded as grayish-brown, and the froth and fluid that exuded were increased in amount. The upper lobe of the right lung was of the same color and general appearance as the left; it was partly covered with adhesions. Apical scarring was noted in this lung, and there was also subpleural edema. The condition of the middle and lower lobes was essentially of the same nature; the lobes were united by interpleural adhesions. A calcified node of the hilum was found.

The liver was purplish-brown, coarsely nodular, and the cut surface was finely granular. There were scat-

*Work done in the Section of Pathologic Anatomy, The Mayo Clinic, Rochester, Minnesota.
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tered regions of thickening in the capsule. The cut surface was mottled yellow and red, and there was definite fatty change in the hepatic parenchyma.

The anatomic diagnosis that was given took account of the features just mentioned and included a notation of silicosis of the lungs. Microscopic examination of

hypertrophy and finally to dilatation of the right side of the heart. The systolic pressure of the blood was not greatly elevated when it was recorded, but the diastolic pressure was relatively too high. The heart weighed as much as many hearts in cases in which hypertension was the underlying lethal factor. The



Fig. 1. A large mass of asbestos, measuring more than 1 mm. in length, obtained from the lung by digesting a portion of the tissue with fuming nitric acid. Evidence of degeneration is the presence of the cross striations in the fibers. The darker portion of the fiber had a distinct yellowish-brown color (x75).

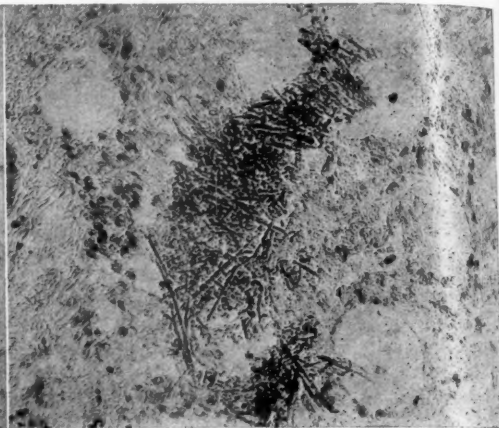


Fig. 2. A tangled mass of asbestos fibers in an unstained section of pulmonary tissue. From its distribution one would suspect that it had been dislodged by the microtome knife. The scattered black dots are "asbestosis bodies," indicating that a portion of the fibers, at least, had undergone change in the tissues (x175).

the essential tissues was made. Numerous phagocytic cells that contained quantities of blood pigment were noted in the alveoli of the lungs. Special stains for iron demonstrated its presence in these cells and also in the walls of blood vessels and alveoli. There appeared to be some increase in the amount of readily visible elastic tissue in the lung. Fibrosis was very marked.

COMMENT

During the final survey of the sections in this case there were observed certain peculiar, brownish, fibrous structures, apparently foreign bodies, in the tissue from the lung, usually embedded in connective tissue, and often engulfed by large giant cells. They did not take the ordinary stains, and some of them were shown to contain iron by the Prussian blue reaction. There was much discussion as to the nature of these bodies, without any conclusion being reached. The possibility was considered that they might be asbestos fibers, but at that time there was little basis for such a contention. There was no history of exposure to asbestos dust, and certain apparent differences were observed between the reactions of these fibers and those shown by commercially prepared asbestos. However, further study strengthened rather than weakened the impression that the bodies were asbestos fibers. Evidently the fibrosis of the lungs was in some way connected with the presence of these foreign bodies. The idea was further entertained that the fibrosis of the lungs was responsible for progressive increase in resistance to the circulation through the organs, and may have led to

complete heart block was hardly to be explained on the basis of partial obstruction. There seemed to be no final answer to several questions connected with the case.

Shortly after the death of this patient, I corresponded with one of his business partners, and mentioned the fibrosis of the lungs. I also wrote that the fibers found looked more like bits of asbestos than anything I could think of, and asked if, fifteen years or more before his death, the patient could have been exposed for any considerable time to inhalation of inorganic dust such as asbestos, or any material that would give sharp, angular particles as well as longer, irregular fibers.

More than eight months after this letter was written, a business associate called on me, and stated that he had ascertained that the deceased had, as a young man, worked in an asbestos mine in South America. Later still, another business associate wrote that while the patient had been in South America he had drilled asbestos bearing rock. The shot holes were cleaned by air. Presumably this was prior to 1898, when he left the tropics, or at least thirty-two years before his death.

The study of the lungs and heart was resumed, so far as material was available. This unfortunately was limited. A few small pieces of pulmonary tissue were subjected to the action of fuming nitric acid to oxidize all the organic matter, and to concentrate in the sediment any inorganic fibers or other particles that may have been embedded in the substance of the lung. The pulmonary tissue contained a surprisingly large amount

of fat which collected as fatty acid on the surface of the liquid. This was not a clear yellow, and a smear of it was made, with the idea that some of the fibers might have been caught in this material and thus prevented from settling to the bottom of the heavy fluid. The sediment collected from the bottom, after washing,

These asbestos fibers did not show more plainly by polarized light. The golden-brown color of the fibers was a distinguishing feature under the microscope.

Smaller fibers of asbestos, when lying separate, seemed to have undergone changes not observed in larger fragments. The butt end of one of these frag-

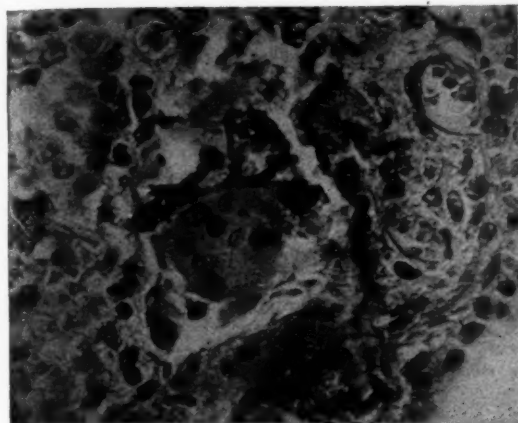


Fig. 3. A small fascicle of asbestos lying in a giant cell. A knob with a brownish envelope has developed on the butt end of the fiber; the frayed ends opposite have broken off as golden-brown oval bodies (x200).

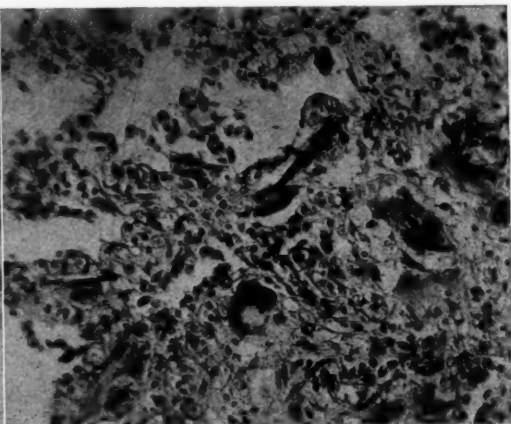


Fig. 4. A group of asbestos fibers surrounded by giant cells. Their golden-brown color distinguished them from fibers of elastic tissue, which stained more of a lilac color with hematoxylin and eosin. The asbestos fibers were frequently thicker and more irregular in outline, and remained unchanged in color with the ordinary aniline dyes (x150).

was found to contain a few fibers, together with some small particles of silica. Such drastic treatment as boiling in fuming nitric acid would destroy most materials, even the finest fibers of asbestos, but would probably not affect appreciably the larger ones.

In the scum that collected on the surface of the solution of nitric acid were found several fragments that were certainly asbestos. The largest was more than 1 mm. in length (Fig. 1). This had the definite cross striations that are characteristic of altered asbestos fibers, as described by various observers.² When viewed under polarized light a portion of the mass was dark and there were brilliant streaks through it, thus duplicating the appearance given by a known sample of asbestos from commercial sources. A portion of the mass of asbestos had a yellowish-brown color of exactly the nature and shade presented by the control sample. The physical configuration also agreed with what one would expect of asbestos.

In Figure 2 are shown the asbestos fibers in a smear where they apparently had been spread through the tissues by the microtome knife. The section in which they were found had not been stained. A few golden-brown oval bodies were mixed with the fibers, suggesting that some alteration in their structure had taken place, but the condition of the main mass indicated that the center had been protected from this change in the tissues. Alteration apparently affected mostly the finer fibers, leaving the larger masses relatively unchanged for this long period of time. Search was made for the elastic tissue fibers about the blood vessels, and in the alveolar walls, but they could hardly be distinguished.

ments is shown in Figure 3. It had become enlarged and knobbed, and had a distinctly brownish color. There seemed to be an envelope of a lighter brownish color about a darker center; the latter was continuous with the fiber inside the giant cell. The frayed ends of the fiber gave place to the golden-brown oval bodies, whereas that portion within the giant cell was the least changed. The majority of asbestos fibers of small size lay in a confused mass of giant cells, which seemed to represent a foreign-body reaction. In Figure 4 is shown a scattered group of fibers, among which can be seen giant cells; the adjacent tissue of the lung has been undergoing interstitial fibrosis. The asbestos fibers were readily distinguished from elastic tissue fibers by their golden-brown color; the fibers of elastic tissue took a lilac-brown stain with hematoxylin. The former were unchanged by ordinary aniline dyes, whereas the latter were readily tinted by various methods usually applied to such tissues.

In certain areas the process was still more advanced and connective tissue of a more mature type was seen, sometimes in more or less circumscribed areas. Such a nodule of scar tissue is shown in Figure 5, but this is not entirely comparable to the so-called silicotic nodules found in cases of silicosis in which tuberculosis plays a part.

There seemed little doubt that many of the asbestos fibers had been almost completely removed from the tissues. The frequent association of partly absorbed fibers and the golden-brown oval bodies shown in Figure 6 leaves little doubt that the latter were derived from the former. They were often in the same giant cell,

or lay close to fibers in various stages of dissolution. There was a central, darker portion, which probably represented the remains of a fiber, and which was not dissolved by nitric acid.³ The outer, lighter brown covering, however, disappeared, and was thought to be a deposit of pigment of endogenous origin, probably

silica were detected in the tissues and in the residue after oxidation with the acid, but not enough to explain the fibrosis which was present. Apparently once asbestos dust enters the lung it continues to injure the tissues as long as the person lives. In short, asbestosis is an incurable disease, and one from which the pa-

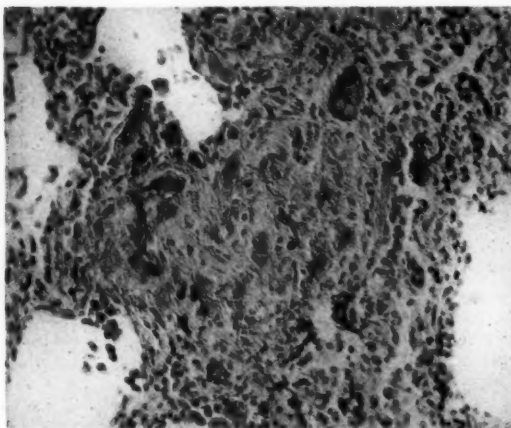


Fig. 5. A circumscribed nodule of fibrosis composed of fibrous tissue and giant cells in the midst of which lie partly degenerated asbestos fibers. The giant cell at the upper edge of the nodule contains several "asbestos bodies" presumably in the stage of transition between a continuous fiber and the golden-brown oval bodies (x200).

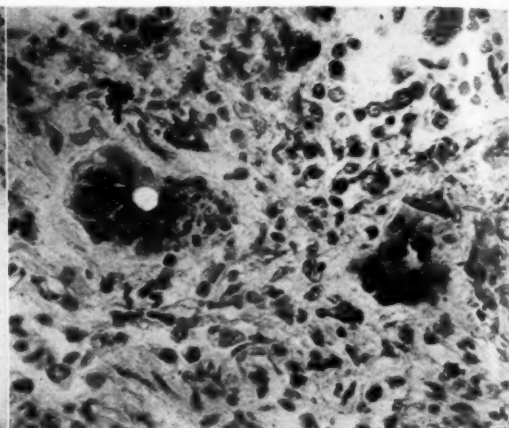


Fig. 6. Two giant cells with inclusions. The one on the right contains a bit of golden-brown asbestos within it, and there is also one above and one below the cell. The cell on the left contains numerous golden-brown bodies and a large vacuole in which lie more of these bodies, together with granules of heterogeneous pigment. The tissue is markedly fibrotic (x450).

derived from the blood. It did not take a Prussian blue stain, although there is reason to believe that it contained iron in the form of one of the higher oxides. These golden-brown oval bodies were not birefringent under polarized light. They were believed to represent the end stage of disintegration of fibers of which an intermediate stage has been described by Cooke,^{1,2} and by McDonald as "curious bodies" and by Stewart and Haddow as "asbestosis bodies." These men saw cases of more intense nature, and fibers that had not been exposed to the tissues for such a long period of time. The oval bodies did not stimulate the foreign-body reaction to such a marked extent as did the incompletely disintegrated fibers, but were scattered in clumps or singly through regions of mature connective tissue. This may be attributed to the cessation in the release of silicic acid in the colloidal form, a process that is believed to explain the fibrosis in cases of silicosis. Asbestos is a silicate, and hence presumably subject to the same dissolving process that affects particles of pure silica in the production of silicosis.

The ordinary "heart failure cells" presented the usual morphology and staining reactions. Occasional cells of the same general nature as the heart failure cell were found, measuring 100 to 150 microns in diameter. They contained only blood pigment, a few golden-brown oval bodies, bits of degenerated elastic fibers, or any combination of the three.

Perhaps the most valuable feature of this case is the extreme length of time that elapsed between the exposure to the dust and death. A few particles of

tient may or may not die. Intercurrent disease has been found in other reported cases to be unusually frequent, especially tuberculosis and bronchopneumonia. Neither were present in this instance, and death occurred from hypertensive heart disease, with complete heart block. This complication has not been mentioned before in this connection.

There is no reason to believe that the hypertension was directly connected with the pulmonary asbestosis, but the extreme dilatation of the right side of the heart is probably attributable to the fibrosis of the lungs. Passive congestion of the lungs is to be considered as a complicating factor, and may have operated in preventing a possible tuberculous infection. Auricular fibrillation was associated with the cardiac decompensation, and the heart block was probably of similar origin. Infarction of the heart was not found, and only the fatty changes in the myocardium were discovered which also involved the bundle of His. Colloidal silica has been found in previous studies⁴ to be injurious to other viscera, especially the kidneys, but in this instance such alterations were not marked. The heart block, then, can hardly be attributed to this toxic factor.

SUMMARY

A case of pulmonary asbestosis, found in the United States, and of at least seventeen years' duration, is described. Pertinent clinical and pathologic details are given. This report corresponds reasonably well with reports from Great Britain.

39 South Main Street.

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METATONE NOT ACCEPTABLE FOR N. N. R.

Shotgun tonic mixtures were very popular a generation ago and some received more or less official recognition by being included in the National Pharmacopeia. In recent years these tonic mixtures have deservedly fallen into disuse, although included in the line of preparations of many manufacturers. Occasionally an effort is made to revive the use of such tonics by the addition of an ingredient the use of which has become a current fad. One of the recent attempts in this direction is the exploitation by Parke, Davis & Co. of a typical shotgun tonic mixture, modernized by the addition of "Vitamin B extract." This preparation, known as Metatone, is stated to have the following composition: alcohol, 1 per cent; Vitamin B extract per fluid ounce, 10 grs.; nucleic acid, 2 grs.; calcium glycerophosphate, 4 grs.; potassium glycerophosphate, 4 grs.; sodium glycerophosphate, 2 grs.; manganese glycerophosphate, $\frac{1}{2}$ gr.; strychnine glycerophosphate, $\frac{8}{200}$ gr." The statement as to the amount of "Vitamin B extract" is meaningless and gives no indication as to the actual amount of Vitamin B present, and there appears to be no good reason for giving it along with the other constituents of Metatone. Most of the other constituents of Metatone have long since been discredited as useful therapeutic agents. The Council on Pharmacy and Chemistry declared Metatone unacceptable for New and Non-official Remedies because it is an unscientific mixture, marketed under a proprietary name with unwarranted therapeutic claims. (*Jour. A. M. A.*, May 3, 1930, p. 1405.)

ELECTRIFIABLE PLATES

The Post Office Department reports that J. M. Hughes, his wife, Mrs. J. M. Hughes, and his daughter, Essie I. Hughes, all of Atlanta, Ga., have for some time been defrauding the public under the trade name "Electrifiable Company" in the sale of so-called heel plates. These plates were crudely cut from sheets of copper and zinc. They cost 25 cents a pair; they sold at \$5 a pair! It was claimed that, when worn in the shoes, the plates would cure hardening of the arteries, high blood pressure, enlargement of the heart, kidney trouble, hardening of the prostate gland, diabetes, rheumatism and dropsy! The Postmaster General issued a fraud order against the Electrifiable Company and J. M. Hughes. (*Jour. A. M. A.*, May 3, 1930, p. 1427.)

USE OF THYROID IN OBESITY

The use of thyroid in obesity should always be controlled by a previous basal metabolism test. If this is normal or subnormal, it is safe for a physician to use thyroid. The best practice is to start with small doses of desiccated thyroid (Thyroideum, U. S. P.) gradually increasing. The small dose would be approximately 0.03 Gm. ($\frac{1}{2}$ grain) twice a day. The physician must keep a sharp lookout for fast pulse, nervousness or other symptoms resulting from thyroid stimulation. An obese person should not expect reduction by thyroid unless his diet is restricted, and when dietary restrictions are followed thyroid is not needed as frequently. (*Jour. A. M. A.*, May 31, 1930, p. 1784.)

PRESIDENT'S LETTER

THE time will never come when the members of the medical profession will cease to seek for more knowledge. They always have done so. They always will do so. That is why they tend to locate where there are other doctors. It is why they establish offices near together, even in the same buildings. It is why they establish medical societies and why they visit medical centers.

So strong is this desire to acquire additional information that they will abandon their work and go from home, often at great expense, to take post-graduate courses of study. When they are not in a position to go away often enough, or stay away long enough, they band together and bring educational courses to their own communities, as witness our extension courses. Perhaps the keynote as to the kind of information sought by these busy men is expressed by the words authoritative and practical.

The program committee of the State Association has borne the latter fact in mind in making up the program to be presented at the meeting in Duluth in July. Every effort has been made to place men on the program who, by virtue of experience and training, can speak authoritatively and who will discuss their various subjects in a lucid and practical manner.

The association has been especially fortunate in its guest speakers. Such men as Prof. Boehler of Vienna, who has revolutionized the treatment of fractures, Prof. Franz Volhard of Frankfort on Main, of kidney fame, W. T. Longcope of Johns Hopkins, Karl Meyer of Northwestern University, Chicago, Ralph Kinsella of St. Louis, E. C. Davidson of Detroit, Michigan, Arnold S. Jackson of Madison and R. S. Dixon of the Detroit Department of Health are generously contributing their services.

There will be symposia. There will be a large range of subjects discussed by trained men affiliated with our institutions of learning, by men who are teaching, by others engaged in clinical work, in private practice. Still others will discourse upon the work of our state institutions. There will be lectures on preventive medicine and a whole evening will be devoted to economics.

The program is alive, up-to-date and thoroughly practical. It offers a tremendous lot of material in a form easy of assimilation. It offers an opportunity to acquire a great fund of medical knowledge within a three-day period. All can afford to come. None can afford to stay away.

S. H. Boyer

President,
Minnesota State Medical Association.

EDITORIAL

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Vol. XIII July, 1930 No. 7

THE ANNUAL MEETING

On to Duluth! Glance at the program of the scientific addresses which appears in this number of the journal and make your plans accordingly.

In former years it was the custom to limit guests from without the state to one or two, the program having been reserved for home talent. In recent years more and more outside talent has been imported and undoubtedly is an attraction. We like to see and hear and meet those whom we have known by reputation only. There is no question but that this phase of most medical

meetings is their real *raison d'être*. The addresses themselves are usually published and can be better digested when read at leisure. The broadening effect of widening one's acquaintance is fully as important as the renewal of acquaintanceship.

Most of us have heard of our distinguished visitors. Who does not know of Volhard by reputation? He is to include the State meeting with his participation in the Kidney Symposium at the University July 7 to 18, and will address the meeting on his favorite subject, the kidney. The tannic acid treatment of burns, which has attracted some international attention, will be presented by its originator, Dr. E. C. Davidson of Detroit. The visit of Professor Lorenz Boehler to this country has attracted considerable attention in medical circles. His reduction method of fractures under local anesthetics and early mobilization of the patient with a special cast and support, will be presented at the meeting.

The scientific exhibits at medical meetings in general have been growing in importance and interest. The display at last year's state meeting was most interesting. To stimulate interest in this part of the scientific program the Southern Minnesota Medical Association has offered a medal for the best scientific exhibit submitted. The exhibits from the Mayo Clinic are excepted.

The scientific program this year will for the first time occupy three full days. Last year local clinics served to fill out the three convention days.

The House of Delegates will meet Monday and Tuesday afternoons. The following Reference Committee has been appointed:

J. R. Manley, Duluth
W. F. Braasch, Rochester
E. M. Hammes, Saint Paul
C. P. Robbins, Winona
C. B. Wright, Minneapolis

The adoption of the Reference Committee method of handling committee reports and resolutions has proved highly satisfactory in expediting the transactions of the House of Delegates.

Shall we meet in Duluth?

THE DOCTOR AS A CITIZEN

The writer has had the opportunity, on the occasion of the meeting in Duluth of the Minnesota League of Municipalities, to hear one of our own active memers, Dr. O. E. Locken, Mayor of Crookston, talk on our affairs to lay audiences. Most of us know of the great interest Dr. Locken has had in various health movements; few of us hear him when he presents to laymen a sane, conservative expression of our medical objectives and an outline of community responsibilities.

It is a pleasure to pay tribute to his consummate skill. We may gain a few points through favorable legislation; we may fortify our professional position by industrious collectivism; but we shall never maintain economic and directional independence unless we are able to sense the times. In the matter of community life doctors expect over much, to be accepted as they are, mantled with a state-given prerogative which virtually amounts to a monopoly. Not always do we attempt to repay the community in which we live by entering fully into the daily movements which are its life.

We like to think that our government exists at our will. But it is rarely indeed that the public really expresses its opinion in anything like mass voting. After elections we drift and criticize our electorate near and far with an abandon that makes office holding and politics something contemptuous or worse. Yet Dr. Locken shows that we have definitely asked our governmental agencies to do endless things for us, few of which we would be willing under any circumstances to see abandoned. Population shifts, pauperism, unemployment, old age pensions, increasing accidental death rates, all present issues that strike closely to the core of the problem of making available to the mass of our population the scientific facts already proven to prolong life and make it worth while. We cannot withdraw into cloistered atmospheres, cheered only by our medical jargon and fancy that a divine right shall entitle us to perpetual leadership and public approval. Such men as Dr. Locken show us the way to a type of citizenship exemplifying an adaptation of our professionalism to our turbulent age.

E. L. T.

THE PRESENT MORALE IN ATHLETIC TRAINING

There is considerable food for thought in an article entitled *Booze Beats Our Athletes*, by Charley Paddock in the June 14th Collier's Weekly. The author, an athlete himself, is in a position to know, first hand, the present situation in athletic training in high school, college and Olympic teams.

While American athletes may never have shown the superiority in athletic events requiring great endurance that they have shown in the shorter races and events requiring more of the element of skill, the author calls attention to the definite slump in the number of our victories in the Olympic games since so-called prohibition was enacted. Since the war we have not won a single victory in races longer than the quarter mile and this is apparently not because of any demonstrable improvement in the status of athletics in other countries. He attributes the slump to the failure to maintain training, particularly as to the use of alcohol. The numerous incidents which came under his observation of drinking and that to excess, not only during training season but even before a race, are startling. The lack of moral stamina necessary to keep strict training as far as the use of strong drink is concerned, is nation-wide in its distribution and has affected high school, college and international athletics.

The general psychological effect of prohibition has apparently invaded the realm of athletics and the change of public sentiment in regard to the use of liquor has seriously interfered with the morale of athletic training. Before prohibition the athlete who broke training during season by taking a drink of liquor had to contend with the pressure of undergraduate or public opinion, which was so strong that such an offender knew in advance that he would likely be dismissed from the team. Apparently not so now. The lack of moral backing seems to have rendered trainers helpless.

The self-indulgence and disregard for authority manifest everywhere is naturally imitated by the youth of the country and this is the most serious psychological effect of the prohibition law.

OF GENERAL INTEREST

Dr. R. S. Ylvisaker, formerly of Minneapolis, is now located in Fergus Falls.

Dr. E. V. Goltz of Saint Paul was married June 18 to Miss Edith Allen of Minneapolis.

Dr. John F. Madden has opened offices at 842 Lowry Medical Arts Building, Saint Paul, for the practice of diseases of the skin and syphilis.

Summer clinics sponsored by the Chicago Medical Society will be held at the Cook County Hospital, Chicago, August 11 to 22, inclusive.

Dr. R. J. Moe, associated with Dr. W. A. Coventry in the Duluth Clinic, Duluth, spent six weeks in March and April in the New York Lying-In Hospital.

It is reported that Dr. Daniel D. Murray of Duluth has recently been married to Mrs. Blanche Kemerer Lord in Minneapolis. Dr. Murray has long practiced in Duluth, and was at one time City Health Commissioner.

Announcement has been received of the marriage of Dr. Wallace I. Nelson and Miss Gertrude Bergerud, which took place in Minneapolis May 27, 1930. Dr. and Mrs. Nelson are now at home in Underwood, Minnesota.

St. Luke's and St. Mary's hospitals, Duluth, report a very successful combined staff meeting for both hospitals for their regular March meeting. This time saving combination of necessary staff meetings promises well, according to staff members.

Dr. A. J. Henderson of Kiester, Minnesota, is taking a post-graduate course in pediatrics at Harvard Medical College, Boston. His practice is being cared for by Dr. D. M. Daley of Lewiston, Minnesota, a recent University of Minnesota graduate.

Dr. P. F. Eckman, an associate in medicine in the Duluth Clinic, Duluth, recently returned from an Eastern trip to New York, Philadelphia and Ann Arbor. He devoted his studies exclusively to hematology. He reports the field of study of secondary anemias a most unsettled one at this time.

Dr. A. T. Laird of Nopeming, with Mrs. Laird, attended the recent meeting of the National Tuberculosis Association at Memphis, Tennessee. Following the meeting they traveled to the Ozarks, where they visited with relatives. They report the Ozarks to be a wonderland at this time of year.

Ragnar Westman was awarded the medal offered by the Southern Minnesota Medical Association for the most proficient work in the clinical field of medicine and surgery during junior and senior years at the University Medical School. The awarding committee consisted of the Professors of Surgery and Medicine and the Dean of the Medical School.

Dr. E. L. Tuohy of Duluth presented the subject "Non-Tuberculous Lung Lesions" to the April meeting of the Pine-Chisago Medical Society held at Pokegama, and also to a combined meeting of the South Dakota and Sioux Valley Medical societies held at Sioux Falls, South Dakota, May 21 and 22.

The Minnesota State Medical Association has been invited by the Inter-State Postgraduate Medical Association of North America to be represented at the International Assembly of the Association in Minneapolis, October 20 to 24, by a scientific exhibit. Complimentary exhibit space is offered through Edwin Henes, Jr., Executive Secretary of the organization.

Dr. E. I. Lindgren, formerly of Duluth, now living in Finland, has returned to Duluth for a short visit. He practiced in Duluth for a number of years, but returned to his home country about three years ago. He reports Finland in a prosperous condition. He has traveled extensively in Europe, devoting his studies as well as his practice in Finland to roentgenology.

Dr. and Mrs. H. W. Froehlich, Thief River Falls, sailed, June 13, for Europe on the steamship Duchess of York, to travel until September. They first will visit England, then to Paris, from there to Frankfurt, Berlin, Dresden, Munich, Oberammergau to see the Passion Play. From Oberammergau they will go to Vienna, Budapest and through the Tyrols. Dr. Froehlich will spend most of his time in Vienna studying the latest developments in surgery at the clinic.

F. Manley Brist, Investigating Attorney for the State Board of Medical Examiners, addressed a luncheon meeting of the Kiwanis Club at Willmar June 24 on current results of medical legislation sponsored by the State Association. In the evening he talked to the Kandiyohi-Swift County Medical Society on related medico-legal affairs. Mr. Brist will be a guest speaker at the annual meeting of the Wabasha County Medical Society to be held in Wabasha, July 10.

The Minnesota Society of Internal Medicine has again offered a prize of \$250 to be awarded for the most worthy research work by a Minnesota physician, exclusive of members of the society. These should be submitted before October 1, 1930, to Dr. E. T. F. Richards, Hamm Building, Saint Paul, chairman of the award committee. Previous winners of the prize are Adolph Hanson, Faribault, 1927; Max Seham, Minneapolis, 1928, and Anderson C. Hilding, Duluth, 1929.

Dr. O. E. Locken, Crookston, presented the evening program of the Trail and Steele County Medical Society of North Dakota, May 1, at Northwood, North Dakota. He addressed the society on the subject of "Newer Phases in the Treatment of Heart Disease." Dr. Locken also gave the commencement address at the graduation exercises of the Nurses Training School of Trinity Hospital, Minot, North Dakota, May 12. Twenty-two nurses graduated from this new two hundred bed hospital.

A PAGE FORUM OF THE COMMITTEE ON PUBLIC HEALTH EDUCATION

Thank You, Mr. Rockne !

Knute Rockne is not a doctor. Probably, being one of the more illustrious and resourceful of famous football coaches, he doesn't even owe any doctors.

But here is his opinion of the profession reprinted from one of the popular Rockne columns called "Campus Comment" in the daily papers. It is of interest because Mr. Rockne is Mr. Rockne—because, as football coach, he has had some intimate dealings with doctors, and because he represents the more enlightened personages among the laity whose observations are worth something.

Perhaps Mr. Rockne's paragraphs will also come to the attention of certain popular magazines that have been occasionally given to airing other opinions on the subject of physicians. Mr. Rockne says:

"John Mohardt, one of my old halfbacks who used to team in the backfield with George Gipp, Paul Castner and Norm Barry back in 1920, is at Rochester. In another six months he will have finished his three year fellowship.

"John went four years to Notre Dame to get a B.S. degree; four years to Northwestern to receive an M.D., has spent two years in a hospital as an interne and then three years as a fellow in the clinic. Thirteen years of study since leaving high school before he feels he is ready.

"John will be 32 by the time he begins to be productive and the chances are that even then his earnings for the first few years will be rather slim.

"A terrific training for a young man. No other profession is nearly so exacting. I have been wondering what makes young men want to go into the practice of medicine with all its grief, endless hours, long preparation and what-not. It has been my observation that the good doctors have a sort of spark in their eyes, whereas many other professions interest men from the standpoint of monetary reward, easy livelihood, soft berth, prestige, or a stepping stone to something else.

"This can never be said of medicine. Medicine apparently is all-absorbing and occupies all of a man's wakeful moments and even some of the others.

"I have tried to analyze some successful doctors and I find that all of them have personality, ability, honesty, capacity for work, a burning zeal toward perfection in his chosen specialty, and intense responsibility regarding the human lives he is taking care of."

Results!

The improved state of mal-practice legislation in Minnesota, brought about largely through the efforts of the Minnesota State Medical Association, is showing very practical results to the physician.

A reduction of seven dollars in physician's mal-practice premium has just been announced by the Aetna Life Insurance Company, effective May 1, 1930.

For coverage of \$10,000 to \$30,000, the premium is now \$21, instead of \$28. This is the charge previously made for half the coverage.

Glenn Frank's Great Doctor

The great doctor must know almost as much about the social order as the sociologist. This is necessary because the varied forces—political, social, economic, industrial, educational, religious—that march across a nation, making its mind or marring its spirit, register their effects in the lives of the doctor's patients. The more the doctor knows about these forces that make the atmosphere in which men's minds and bodies live, the more intelligently can he trace effects to their causes, and the more wisely can he counsel his patients.

The great doctor must know almost as much about the mind as the psychologist. This is necessary because even the most materialistic scientist admits that there is a subtle relationship between mind and body that the doctor of the body dare not overlook, for when he does overlook this relationship a thousand quacks rush in to capitalize his oversight.

The great doctor must know about the subtle art of counselling as the priest.

The great doctor must refuse to be party to the ironic paradox of commercializing a profession just when the professionalization of commerce begins to dawn.

The great doctor must decline to tear his specialism out of the living texture of the whole medical fabric. He will not allow the noble science of surgery, for instance, to degenerate into a merely higher carpentry.

And, finally, the great doctor must be able to distinguish between Hippocratic ethics and hypocritical etiquette in matters professional.—Glenn Frank, President, *The University of Wisconsin, in Surgery, Gynecology and Obstetrics.*

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

MINNESOTA STATE MEDICAL ASSOCIATION



Dr. W. T. Longcope, Professor of Medicine, Johns Hopkins, Baltimore, who is to address the Minnesota State Medical Association at the Annual Meeting in Duluth.

PROGRAM

62nd Annual Meeting
MINNESOTA STATE MEDICAL ASSOCIATION
Sunday, July 13, 1930, 6:30 P. M.
Meeting of the Council
English Room, Hotel Duluth
Monday, July 14, 1930, 2 P. M.
Meeting of the House of Delegates
English Room, Hotel Duluth
Registration and Meeting Headquarters—Duluth Hotel
Monday Morning—July 14—8:30 A. M.
Ball Room, Hotel Duluth
PRESIDING OFFICERS
Section on Medicine
F. A. Willius, M.D. Rochester
Edgar T. Herrmann, M.D. Saint Paul
Section on Surgery
J. M. Hayes, M.D. Minneapolis
W. N. Graves, M.D. Duluth

SYMPOSIUM ON TRAUMATIC SURGERY

Health Education
F. H. Magney Duluth
Wounds of the Chest (*lantern slides*)
B. F. Davis Duluth
Costochondral Graft for the Repair of Skull Defects (*lantern slides*)
A. M. Hanson Faribault
Head Injuries (*lantern slides*)
Wm. McK. Craig Rochester
Reduction of Compression Fractures of the Vertebra (*lantern slides*)
E. T. Evans Minneapolis
Treatment of Fracture of Hip—Whitman Method (*lantern slides*)

Emil Geist Minneapolis
Fractures of the Lower End of Tibia and Fibula (*lantern slides*)
V. P. Hauser Saint Paul
The Treatment of Tetanus and Gas Gangrene (*lantern slides*)
M. H. Manson Minneapolis
Acute Traumatic Surgery of the Abdomen
Karl Meyer Chicago
Associate Professor of Surgery, Northwestern University; Medical Superintendent, Cook County Hospital.
Address: Fractures (*moving picture demonstration*)
Primarius Lorenz Boehler Vienna
Chief Surgeon Director, Vienna Accident Hospital.

Monday Afternoon—July 14

The Treatment of Neurological Changes in Pernicious Anemia
W. T. Longcope Baltimore
Professor of Medicine, Johns Hopkins.
Address: Treatment of Nephritis
Franz B. Volhard, Frankfort-on-the-Main, Germany
Professor Internal Medicine and Director of City Hospital.

SYMPOSIUM ON IMMUNOLOGY

Poliomyelitis and Measles
C. A. Stewart Minneapolis
Diphtheria and Scarlet Fever (*lantern slides*)
W. Ray Shannon Saint Paul
Cerebro-Spinal Meningitis (*lantern slides*)
Carl O. Kohlbry Duluth
Pneumonia
E. P. Reiman Buffalo
The Problem of Allergy
W. P. Larson Minneapolis

OUR STATE INSTITUTIONS

Feeble Minded, Blind and Deaf
J. M. Murdoch Faribault
Tuberculosis
Arnold S. Anderson Saint Paul
Epileptic Colony
D. E. McBroom Cambridge
University Hospital (*lantern slides*)
Mr. Paul Fesler Minneapolis
Gillette State Hospital (*moving picture demonstration*)
C. C. Chatterton Saint Paul
Insane
A. F. Kilbourne Rochester

Monday Evening—July 14—7:30 P. M. Ball Room, Hotel Duluth

MEDICAL ECONOMICS MEETING

E. A. Meyerding, Chairman THE ECONOMIC TREND OF MEDICINE

The United States Veterans' Bureau, Its Place
N. S. MacDonald Minneapolis
United States Veterans' Bureau.
The Increasing Importance of the Medical Reserve
Col. George A. Skinner, M.C.U.S.A. Omaha
Surgeon, Seventh Corps Area.

- The Place of the Local Hospital
Mr. Paul Fesler.....Minneapolis
Superintendent, University Hospital.
- The Doctor's Wife
Mrs. J. D. Lyon.....Minneapolis
President, Women's Auxiliary, Minnesota State Medical Association.
- The Place of the Local Medical Society
Mr. Wm. J. Burns.....Detroit
Executive Secretary, Wayne County Medical Society.
- In Wisconsin
Mr. J. G. Crownhart.....Madison
Secretary, Wisconsin State Medical Society.
- In Middle West
John H. Peck.....Des Moines
President, Iowa State Medical Society.
- What Is It?
Olin West.....Chicago
Secretary, American Medical Association.
- Tuesday Morning—July 15—8:30 A. M.
Ball Room, Hotel Duluth
- SYMPOSIUM ON EARLY DIAGNOSIS AND TREATMENT OF
MALIGNANCY
- Stomach (*lantern slides*)
Leo G. Rigler.....Minneapolis
- Mouth and Lip (*lantern slides*)
F. A. Figi.....Rochester
- Uterus
W. A. Coventry.....Duluth
- Colon (*lantern slides*)
F. W. Rankin.....Rochester
- Rectum
A. C. Strachauer.....Minneapolis
- Breast (*lantern slides*)
O. J. Campbell.....Minneapolis
- Urogenital Tract (*lantern slides*)
Walter Walters.....Rochester
- Discussion
W. J. Mayo.....Rochester
- Evulsion of the Phrenic Nerve for Pulmonary Tuberculosis (*lantern slides*)
Everett K. Geer.....Saint Paul
- Some Clinical Features of Chronic Pulmonary Fibrosis (*lantern slides*)
A. T. Laird.....Nopeming
- Acute Appendicitis—Causes of Death
A. L. McDonald.....Duluth
- Intra-Abdominal Abscess (*lantern slides*)
P. E. Stangl.....Saint Cloud
- Cinematograph Demonstration of Living Tissue Cells Growing in Vitro (*Canti*)
Tuesday Afternoon—July 15
- SYMPOSIUM ON RHEUMATIC FEVER
- Bacteriologic Studies (*lantern slides*)
B. J. Clawson.....Minneapolis
- In Childhood
H. F. Helmholz.....Rochester
- Carditis
Max Hoffman.....Saint Paul
- Visceral Manifestations (*lantern slides*)
E. L. Gardner.....Minneapolis
- Non-Articular Forms
Harry Oerting.....Saint Paul
- Special Consideration of Etiologic Factors
Ralph Kinsella.....Saint Louis
Professor of Internal Medicine, St. Louis University.
- Extra-Uterine Pregnancy
J. C. Masson.....Rochester
- The Economic Importance of Squint in Children and Its Effect in After Years (*lantern slides*)
F. N. Knapp.....Duluth
- Vaginal Hernia with Report of Two Cases Operated (*lantern slides*)
E. K. Green and L. K. Buzzelle.....Minneapolis
- Further Results of the Treatment of Pernicious Anemia with Swine Stomach (*lantern slides*)
H. M. Conner.....Rochester
- Acute Bowel Obstruction (*lantern slides*)
O. H. Wangersteen.....Minneapolis
- Fractures of the Pelvis (*lantern slides*)
Owen W. Parker.....Ely
- The Practical Value of an Examination of Blood Smears (*lantern slides*)
C. H. Watkins and F. J. Heck.....Rochester
- Circulatory Tests Before Amputation
W. T. Peyton.....Minneapolis
- Wednesday Morning—July 16—8:30 A. M.
Ball Room, Hotel Duluth
- SYMPOSIUM ON ANESTHESIA
- Use of Barbiturates in Surgical Procedures (*lantern slides*)
C. F. Dixon.....Rochester
- Spinal Anesthesia (*moving picture demonstration—lantern slides*)
Arnold S. Jackson.....Madison, Wisconsin
- Eye, Ear, Nose and Throat Anesthesia
L. W. Morsman and Andrew Sinamark.....Hibbing
- The Principles of Administering Local Anesthesia with Moving Picture Demonstration
R. E. Farr.....Minneapolis
- S. R. Maxeiner (*lantern slides*).....Minneapolis
- General Anesthesia—Complications (*lantern slides*)
Ralph Knight.....Minneapolis
- Installation of Officers
Cranial Nerve Palsies (*lantern slides*)
L. H. Ziegler.....Rochester
- Sodium Amylethyl Barbiturate in Psychiatry
L. R. Gowan.....Duluth
- Recurrent Lymphangitis
W. H. Goeckerman.....Rochester
- A Discussion of Some Clinical Features of Obstructive Jaundice (*lantern slides*)
Albert M. Snell and F. M. Jordan.....Rochester
- Wednesday Afternoon—July 16
- SYMPOSIUM ON THERAPY
- The Problem of Disease of the Paranasal Sinuses (*lantern slides*)
H. I. Lillie.....Rochester

Use of Tannic Acid in Burns of Children (*lantern slides*)

E. C. Davidson.....Detroit
Attending Surgeon, Children's Hospital of Michigan; Junior Surgeon, Harper Hospital.

Common Foot Disorders

A. E. Flagstad.....Saint Paul

The Physician's Coöperation in Public Health Administration

F. E. Harrington.....Minneapolis

Clinical Hypothyroidism

Frederick H. K. Schaaf.....Minneapolis

Encephalitis

W. H. Hengstler and G. N. Ruhberg.....Saint Paul

Skin Diseases (*clinic and lantern slides*)

H. E. Michelson.....Minneapolis

Hypertension (*lantern slides*)

N. M. Keith.....Rochester

Synopsis of Treatment of Chronic Arthritis (*lantern slides*)

George A. Williamson.....Saint Paul

Question Box

F. J. Hirschboeck.....Duluth

Henry L. Ulrich.....Minneapolis

A question box will be placed at the registration desk, and questions on therapy may be deposited therein at any time before 1 P. M. Wednesday. Discussion will be limited to five minutes.

THE ANNUAL BANQUET

Ball Room, Hotel Duluth

Tuesday Evening—July 16—6:30 P. M.

Toastmaster, W. A. O'Brien, Minneapolis

Address of Welcome

Mason Forbes.....Duluth

County Attorney, St. Louis County.

Introduction of Past Presidents and Foreign Guests.

Response

J. T. Christison, Past President.....Saint Paul

The Women's Auxiliary

President-Elect.

The State Association

S. H. Boyer, President.....Duluth

The President-Elect.

Dancing

WOMEN'S AUXILIARY OF THE MINNESOTA STATE

MEDICAL ASSOCIATION

Monday, July 14

3:00—

Meeting of the State Executive Board.

Home of Dr. and Mrs. Ben. F. Davis, 2317 Woodland Ave.

3:00—

Boulevard drive leaving the Hotel Duluth for the Garden Party Tea.

4:00-6:00—

Garden Party Tea.

Home of Dr. and Mrs. Ben. F. Davis, 2317 Woodland Ave.

7:30—

Medical Economics Meeting.

Ball Room, Hotel Duluth.

Tuesday, July 15

10:00 A. M.—

Annual Meeting.

English Room, Hotel Duluth

Address

S. H. Boyer, President.....Duluth

The Women's Auxiliary and the Committee on Public Health Education

George Earl.....Saint Paul

The Importance of the Women's Auxiliary

Ralph Knight.....Minneapolis

1:00 P. M.—Business Meeting.

Luncheon and Program—Northland Country Club.

Cars will leave the main entrance of the Hotel Duluth at 12:30 P. M.

Toastmistress, Mrs. James Blake, Hopkins

President, Women's Auxiliary of the Hennepin County Medical Society

Responses

By the Presidents of the Component Auxiliaries

Heart

C. N. Hensel.....Saint Paul

Immunology

H. F. Helmholz.....Rochester

6:30 P. M.—Annual Banquet

Ball Room, Hotel Duluth.

OUR GUESTS

Primarius Lorenz Boehler.....Vienna

Prof. Franz Volhard.....Frankfort-on-the-Main

W. T. Longcope.....Baltimore

E. P. Reiman.....Buffalo

Mr. Wm. J. Burns.....Detroit

E. C. Davidson.....Detroit

Mr. J. G. Crownhart.....Madison

Arnold S. Jackson.....Madison

Ralph Kinsella.....St. Louis

Karl Meyer.....Chicago

John H. Peck.....Des Moines

George A. Skinner.....Omaha

Olin West.....Chicago

THE SYMPOSIUM ON THE KIDNEY IN HEALTH AND DISEASE

Since the preliminary program was issued the number of contributors to the Symposium has materially increased. Thus Prof. I. Snapper is coming from Amsterdam, Dr. J. Gamble from Boston, Dr. Jonas Friedenwald from Baltimore, etc. It will be possible to give a presentation of the following topics.

The anatomy of the kidney will be presented in a way which might be considered characteristic of the present-day trend in American anatomy. The physiology of the kidney will be treated with considerable fullness and with close correlation between form and function.

The chemical processes taking place in the kidney usually do not receive much attention but will here be given separate consideration. The clinical ways of testing kidney function will be discussed in detail, particularly the new urea and creatinine tests.

The clinical aspects of Bright's disease will be presented at length in a series of clinics, for which several doctors outside the University clinics have kindly

contributed valuable material. The pathological changes occurring in the kidneys will be described and the nature of the pathological processes discussed. The degree of correlation existing between anatomical lesions and the clinical pictures of Bright's disease will provide the topic for a round table discussion. Borderline cases between harmless albuminuria and Bright's disease will be presented and discussed. Albuminuria itself will be discussed both as to its chemical nature and in regard to its effect upon the blood proteins. The newer clinical tests for albumin will be demonstrated and evaluated.

The edema problem will be treated at some length. The same will be the case with the topic of uremia. The treatment of the convulsive type of uremia will be given special consideration. The eye changes in Bright's disease will be diagnosed and discussed at considerable length both as to their diagnostic and prognostic significance. Special discussion will be given to the chapter of hypertension. The general treatment of the diseases of the kidney will be outlined and the nature of the effect and the specific use of diuretics will be presented in detail.

The number of round table discussions has been increased so as to give every opportunity for the presentation of different points of views. A number of medical clinics in U. S. A. and Canada will be represented at the round tables and their experiences will be communicated.

An exhibition of older works dealing with the kidney has been arranged in the University Library by Dr. S. P. Miller of the Department of Anatomy.

A report containing the essential material presented during the Symposium will be published as an independent volume as soon as possible after the Symposium.

MINNESOTA SOCIETY OF INTERNAL MEDICINE

Duluth entertained the membership of the Minnesota Society of Internal Medicine for its semi-annual meeting Monday, May 26. Out of a membership of about fifty over 80 per cent were in attendance. The program was a very intensive one, made up of twenty-one presentations, all by members.

At a banquet session in the evening Dr. Anderson Hilding (formerly of Duluth, now of Rochester, Minnesota) presented his prize winning thesis dealing with "The Common Cold."

Dr. E. L. Tuohy presided at the meeting and banquet.

DAKOTA COUNTY MEDICAL SOCIETY

Preparations for organization of a Dakota County Medical Society were begun by eight Dakota County physicians at Hastings, Monday, June 9.

Dr. E. A. Meyerding, secretary of the State Association, and Dr. F. J. Savage, councilor of the district, were present to assist in organization. They will present application for a charter for the new society to the House of Delegates at the annual state meeting in Duluth, July 14, 15 and 16.

With the organization of the Dakota County Society,

only one county, Lake of the Woods, still remains unorganized or unaffiliated with some county medical organization in the entire state of Minnesota.

The Dakota County signers of the petition for a charter are L. D. and L. R. Peck, H. A. Fasbender, R. C. Radabaugh, Hastings; T. J. Gaffney, Lakeville; J. A. Sanford and G. A. Walter, Farmington, and W. T. Hagerty, Cannon Falls.

SCOTT-CARVER COUNTY MEDICAL SOCIETY

Scott-Carver County Medical Society officers elected at the annual meeting of the Society at Shakopee, June 10, for 1931 are: Dr. M. B. Hebeisen, president; Dr. W. S. Emmerson, vice president; Dr. C. F. Cervenka, secretary and treasurer; Dr. Fred C. Westerman, delegate; Dr. B. H. Simon, alternate, and Dr. M. B. Hebeisen, censor.

Dr. Frederic Foley, St. Paul, addressed the Scott-Carver meeting on various types of bladder neck obstruction and Dr. C. N. Hensel, St. Paul, talked on the heart. The July meeting of the Society will be held at Watertown by invitation of Dr. H. A. Halgren.

MEDICAL BROADCAST FOR THE MONTH

The Minnesota State Medical Association Morning Health Service

The Minnesota State Medical Association broadcasts weekly at 10:15 o'clock every Wednesday morning over station WCCO, Minneapolis and St. Paul (810 kilocycles or 370.2 meters).

Speaker: William A. O'Brien, M.D., Associate Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota.

The program for the month of July will be as follows:

- July 2—Vacation Time
- July 9—Growth in Childhood
- July 16—Cause of Hernia
- July 23—Facial Neuralgia
- July 30—Common Foot Disorders

RIVAL PROPHYLACTICS IN DIPHTHERIA

The early success with toxin-antitoxin in this country has given to it almost exclusive use in prophylaxis. There are, however, other effective ways of reducing the toxicity of diphtheria toxin besides partial neutralization with antitoxic serum. The products of these newer methods have been extensively used in Canada and in Europe. In the schools of Milwaukee from 1925 to 1928 the respective percentages of immunity achieved by the use of toxin-antitoxin were 85, 62, 75 and 69. With diphtheria toxoid better results were obtained, only 2 out of 128 giving positive Schick tests after treatment. Another claim in favor of diphtheria toxoid is that it does not result in sensitization to horse serum. However, it is not likely that toxin-antitoxin produces any noticeable sensitization; further, the toxin-antitoxin may be prepared with goat or sheep serum. Diphtheria toxoid would seem to be at least as valuable as diphtheria toxin-antitoxin mixture and in the pre-school child is probably to be preferred. (Jour. A. M. A., May 24, 1930, p. 1708.)

OBITUARY

Louis Leypoldt Moench

1875-1930

Dr. L. L. Moench, well known physician of Waterville, Minnesota, met death Monday afternoon, June 2, 1930, when a deer rifle which he was taking from his car was accidentally discharged. He was instantly killed when the bullet entered his body under the right arm and came out over his heart. The rifle was a 30-30 Winchester which had been purchased for the purpose of deer hunting. Death was instantaneous. The deputy coroner, Dr. Kolars, of Le Sueur Center, was called and gave his verdict that the shooting was accidental.

Dr. Moench, born Dec. 6, 1875, received his medical training at the Eclectic Medical Institute, now the Eclectic Medical College in Cincinnati, where he was graduated in 1903. He practiced at Monteith, Iowa, and at Kilkenny before moving to Waterville, where he had practiced for the past sixteen years.

Dr. Moench is survived by his wife and two sons, George 21, and Hubert 17.

Benjamin M. Randall

1858-1930

Dr. Benjamin M. Randall, a practicing physician at Graceville, Minnesota, for many years, died at his home May 24, 1930. Death was due to arteriosclerosis and cerebral hemorrhage.

Dr. B. M. Randall, son of Major B. H. Randall, was born at Fort Ridgely, Minnesota, on June 7, 1858. A few years later following the outbreak of the Sioux Indians in that region he moved with his parents to St. Peter, where he received his early education. He was graduated from Rush Medical College in 1883. After practicing a year in Graceville he left for New Ulm, but returned to Graceville the following year and has practiced here since that time. He is survived by his widow, Lenora Fallon Randall, four daughters, the Misses Willa and Esther Randall and Mrs. M. J. Goblirsch of Graceville and Mrs. F. A. Cummings of Minneapolis, and two sisters, Mrs. Leroy Foster and Miss Froelie Randall of Opalocka, Florida.

From the days of his coming to Graceville Dr. Randall has ever been a valued participant in the social life of the vicinity. He was a member of the Court of Honor, the Hibernian Society, and the Knights of Columbus as well as of numerous other groups organized from time to time for individual or civic uplift.

In the formation and development of the Old Settlers Association he had the keenest interest, ably assisting as he could with his vast fund of accurate historical information covering early Minnesota. Many have been the gatherings made incomparably richer by

the gems of thought and sparkling wit reflected from his wealth of cultured background.

To the many now scattered associates of his early years in Graceville the very name of Dr. Randall recalls a host of poignant memories, and no mere words can serve to estimate their sense of appreciation of all that he has meant to them. A friend of later days makes mention of a never-to-be-forgotten period in his career when failure to be accepted among those enlisting for War service left him the sole responsibility of administering medical aid through a large territory during the ravaging "flu" epidemic of 1918, a work of sacrifice and heroism accomplished under almost impossible conditions. Thus, those who have come to know him in more recent times as well have not failed to be impressed by the unusual quality of his devotion to his chosen field, a profession privileged and made nobler still in having him as a symbol of its loftiest ideals.

George Ellsworth Chamberlain

1864-1930

Dr. George Ellsworth Chamberlain, well-known physician and surgeon of Aberdeen, Washington, and a practitioner for several years in Minnesota, died April 13, on the anniversary of the day in 1893 when he was graduated from the College of Physicians and Surgeons of Chicago, the medical department of the University of Illinois. His death came in his sleep and although he was stricken with a cerebral hemorrhage last May, his condition has been no more serious than before and his passing was a surprise to family and friends.

He is survived by his wife and two children, Samuel V. Chamberlain of Paris, France, and a daughter, Mrs. Walter Wiebenson, of Sausalito, California.

Dr. Chamberlain was born in Indiana July 8, 1864. From his earliest years he evinced a strong desire to become a physician and worked throughout his early years to attain that desire. Colonial ancestry on both sides of his family made him strongly patriotic. His grandparents were among the early settlers in Boone county, Kentucky, being located there at the time of the Revolution.

After his graduation with high honors from the medical college, he practiced in Wells, Minnesota, for two years. He located at Waterville, Minnesota, where he practiced his profession until 1902, later settling at Bismarck, N. D. He was married July 3, 1892, to Miss Cora Lee Summers at Richmond, Wisconsin.

Dr. and Mrs. Chamberlain moved to Aberdeen March 5, 1905, and have since resided in that city. He founded the Aberdeen General Hospital about twenty years ago and was its president until March 12, 1928. He was the first physician in the city to become a Fellow of the American College of Physicians and Surgeons, an honor which was very dear to his heart. He was a member of the Elks and of the Masons. He was a kindly, lovable man, understanding of young and old alike and ever faithful to his duty and ready to give of his sympathy and time.

CONSULTATION BUREAU

WM. A. O'BRIEN, M.D., *Director*

Minnesota State Medical Association

11 West Summit Avenue

Saint Paul, Minnesota

1. *Question*.—A patient of mine has undulant fever according to the laboratories of the State Department of Health. The fever persists. I understand that you have a case at the University Hospital now. What treatment have you worked out? I would be very glad to try anything that is promising.

Answer.—As far as we have been able to find, no specific treatment exists for undulant fever. The treatment is expectant. If the patient is losing weight, it is advisable to put him on a high caloric diet. Bed rest may be necessary because of fatigue and analgesics for pain. As a general rule patients with undulant fever feel fairly well and are able to do a limited amount of work. A vaccine is being tried at the present time, but the results are variable, and the reactions are said to be severe.

2. *Question*.—I would like to have a little advice on treating a case of gingivitis due to actinomycosis. The case is of about two years' duration. Diagnosis was made by the sulphur granules. At two different times these were placed under the microscope, and a typical filament formation was seen. The gums are involved on both the buccal and lingual surfaces along the incisors and cuspids of both the upper and lower jaws. During the past month I have had the patient using potassium iodide internally and tincture of iodine locally three times a week. The tincture of iodine was discontinued two weeks ago because it irritated the gums too much. I have just started the use of ultraviolet light on this patient, but have not had time yet to observe its effects. Any suggestions you have to offer in the treatment of this case will be appreciated.

Answer.—Your patient probably has pyorrhea alveolaris. Fungi belonging to the actinomycosis group are found in this disease. They are not the pathogenic organism responsible for the disease as we know it in man and animal. The first essential in the treatment of pyorrhea is to avoid excessive local treatment. The mouth should be thoroughly cleansed daily and the gums massaged. A dentist should examine the mouth very carefully for evidence of malocclusion. The trauma incident to malocclusion often keeps up the trouble in the gums. If this can be corrected the mouth will often clear up without any further treatment.

3. *Question*.—A patient recently presented himself at the clinic for diagnosis giving a history of having passed large quantities of urine for several years and of consuming large quantities of water. The patient is ten years old, a male, underdeveloped and undernourished. The specific gravity of the urine is practically 1 and of very light color. A provisional diagnosis of diabetes insipidus has been made. I would like very much to know of any recent development in the treatment of this disease and would appreciate any suggestions that you may have to offer.

Answer.—Pituitrin materially relieves the unpleasant symptoms of diabetes insipidus when given in daily injections of amounts determined

by the tolerance of the patient. Such treatment is not curative, however. I would advise you to start out with a daily injection of pituitrin, graduating the dose according to the relief of symptoms. If the injections in the arm became painful, it may be used on pledgets of cotton placed in the nose. The urine should be carefully followed for any evidence of sugar which might appear at a later date. It would also be advisable to correct any disturbing emotional factors which may be present in the child's environment. Sometimes diabetes insipidus is precipitated by a fright or scare and relief of symptoms may be obtained in part by correcting environmental factors.

4. *Question*.—I have a case of headache in a young man, age 24, that has presented no little difficulty in diagnosis. The history follows: The patient had been working on a farm for several months. On Monday, June 2, he left the farm and started home. While on the train he began to complain of a throbbing frontal headache. This continued until Wednesday night, June 4, when I first saw him. The headache was extremely severe, but was relieved after an hour by $\frac{1}{4}$ grain pantopon. Physical examination revealed essentially nothing abnormal; pulse 68, temperature 98.4, blood pressure 130/78, urine normal. There was a considerable amount of mucopurulent discharge from the nose which led to a tentative diagnosis of frontal sinusitis. On June 5, the patient felt well and was up and about all day, but about 8 p. m. he was suddenly taken again with very severe headache. He was crazy with pain, crying out in agony, pounding his head, and unable to lie still for more than a few seconds at a time. I stayed with him for several hours, and after he had had one grain of pantopon and 1/150 grain of hyoscine hydrobromide, he was slightly relieved. About 2:30 a. m. he had a generalized tonic convulsion (which I did not observe) that lasted for about five minutes. After that he dozed until morning. On June 6, he was admitted to the hospital. An ophthalmologist reported no error of vision and normal fundi. X-ray examination showed no pathology in the sinuses. A lateral stereo of the head was negative except for indefinite outline of the posterior clinoid process of the sella turcica. Spinal puncture gave a clear spinal fluid with cell count of 10. Spinal pressure was 9 mm. of mercury, and after removal of 15 c.c. of fluid the pressure was 6. Spinal puncture gave no relief from headache. Blood and spinal fluid Wassermanns negative. Leukocyte count 8,700. Patient remained in hospital until June 10. During his stay, the headache gradually subsided with occasional doses of morphine and hyoscine. Since his discharge he has felt well. There is nothing in the family history or in the past history which throws any light on the case.

Answer.—The headache does not resemble the usual attack of migraine. You have apparently ruled out sinus infection. Epilepsy does not

(Continued on Page 514)

MISCELLANEOUS

THE SCOPE AND AIM OF THE COMMITTEE
ON THE COST OF MEDICAL CARE

At the spring meeting of the Committee on the Cost of Medical Care in Washington, May 2 and 3, 1930, a special committee of private practitioners was appointed to consider the relation of the committee to the private practitioners of the country. This committee, composed of the undersigned members, now submits the following statement for the information of these practitioners on the scope and aim of the committee's work.

It was clearly recognized by all present at the spring meeting that the committee has undertaken a program of studies which in its scope goes far beyond that part of the cost of medical care which physicians provide. The expense of several other kinds of service now looms large in the total cost of many illnesses. In addition, special emphasis was given at the meeting to the question of the adequacy of the various services available in a community. Finally, the committee adopted a statement of three fundamental principles proposed by the Chairman, which should go a long way toward reassuring those who have been apprehensive regarding the nature of the committee's ultimate recommendations.

I.

The committee is interested in far more than the physician's bill, which, in many instances, is considerably less than half the total cost of illness. Hospital care, nursing, dentistry, laboratory examinations and medicines often involve considerable expense, as is clearly shown by several of the committee's studies which are now being completed or have already been reported upon. In one middlewestern county recently surveyed, the expenditures for various kinds of medicines constituted over one-third of the total expense for medical care, and were 20 per cent greater than the costs of physicians' services. It is also becoming apparent that a great deal of money is being spent for useless medicines and for various irregular forms of treatment which do the patient no good or which may result in positive harm.

In order to indicate clearly the broad scope of the committee's work, it was decided at the spring meeting to make a slight change in its name. The word "cost" is to be changed to "costs." The complete name of the committee, with subtitle, will henceforth be "The Committee on the Costs of Medical Care—Organized to Study the Economic Aspects of the Prevention and the Care of Sickness, including the Adequacy, Availability and Compensation of the Persons and Agencies Concerned."

One vital problem before this committee, declared a prominent physician member, at the recent meeting, is the determination of what is reasonably adequate care. In many cases of obscure disorders and serious illness, expensive facilities are essential. Presumably, there must be available in the community well trained gen-

eral practitioners, certain specialists, dentists, nurses, hospitals and health agencies—trained and well equipped to do their part in providing all the care that the individual may need. A plan of the executive committee, to conduct a study to determine standards of adequate medical care, under the general direction of some well-known competent physician and with the assistance of a committee of fifteen or twenty other physicians, was heartily endorsed at the meeting of the general committee.

The aim of the committee is to study the problem described by Dr. Olin West, the Secretary of the American Medical Association, as the one great outstanding problem before the medical profession today. This, he says, is that involved in "the delivery of adequate, scientific medical care to all the people, rich and poor, at a cost which can be reasonably met by them in their respective stations in life." The committee is endeavoring to establish a foundation of facts which have an important bearing upon this problem. On the basis of these facts, it will propose recommendations for the provision of adequate and efficient therapeutic and preventive service for all the people at a reasonable cost to the individual, which, at the same time, will provide physicians, dentists, nurses, hospitals and other agents assurance of adequate return. This is not a new statement of aim. Recent discussion, however, has given new emphasis to certain aspects of it. There are important items in the cost of sickness other than the physician's bill; and the adequacy of the service provided must be considered. The program of studies is a comprehensive one. It deals with questions of supply, demand, distribution and costs of all kinds of services, both preventive and curative; the relation of these costs to other expenses; the return accruing to the practitioners and various agents furnishing medical services; and especially will it seek to determine what standards of adequacy may reasonably be expected.

II.

Dr. Ray Lyman Wilbur, Chairman of the committee, proposed at the meeting May 2 a statement of three fundamental principles for the consideration of the committee. This statement was referred to each of four subcommittees which held sessions during the two-day meeting. The entire committee, at its last session, May 3, adopted with a few verbal changes the three principles. These will be of special interest to the physicians and dentists. They follow:

1. *The personal relation between physician and patient must be preserved in any effective system of medical service.*

Medical service is and doubtless, by its very nature, must remain a distinctly personal service. Even in this age of standardized commodities for the table, ready-to-wear clothing, and interchangeable spare parts for all types of machines, there has been no plan suggested for the reduction of medical diagnosis and treatment to basic units which can be ordered from travelling salesmen or acquired through correspondence courses. The physician must see his patient and see him, in many cases, over an extended period of time if the diagnosis and treatment are to achieve the greatest

possible accuracy and efficiency. There is no substitute for personal observation.

Man is not a standardized machine and each individual reacts to the conditions of life in a manner in some respects unique. In the treatment of disease, this individual variation is a factor of great significance and can receive due consideration only when the practitioner has known the patient for a considerable time and maintains a personal relation with the patient.

2. *The concept of medical service of the community should include a systematic and intensive use of preventive measures in private practice and effective support of preventive measures in public health work.*

The cost of adequate curative treatment is now high and may continue to increase as expensive procedures resulting from scientific progress become more widely used. Sickness, in addition, involves other personal and social costs, some of which cannot be measured in monetary terms.

The outstanding achievements in scientific medicine have been made in the preventive rather than the curative field. Knowledge now available for the control of malaria, tuberculosis, smallpox, diphtheria, pellagra, typhoid fever, hookworm disease, and goiter, if effectively applied, would make unnecessary a considerable proportion of the present expense for the cure of sickness.

3. *The medical service of a community should include the necessary facilities for adequate diagnosis and treatment.*

From the standpoint of effective diagnosis, many diseases, such as tuberculosis, cannot be recognized promptly in their early stages without the aid of elaborate technical equipment. From the standpoint of adequate therapy, if the best of modern technic is not immediately available, complete cures are either delayed or rendered impossible of attainment. To cite a specific illustration of the improvement of modern therapeutic procedures over those of ten years ago, the time required for treatment of fractures of the hip, and the percentage of permanent invalidity resulting from that injury have each been reduced by more than half.

We cannot be content with anything except the best possible service that modern science can provide and it is therefore imperative that modern scientific equipment for the diagnosis and treatment of disease be available to the practitioners of medicine in every community.

SPECIAL COMMITTEE OF PRIVATE PRACTITIONERS.

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PROGRESS

Abstracts to be submitted to Section Supervisors.

Members are urged to abstract valuable articles which they run across in their reading and send the abstracts to the physicians in charge of the respective sections. In order to avoid duplication it would be well to communicate with one of the section supervisors before the article is abstracted.

MEDICINE

SUPERVISORS:

F. J. HIRSCHBOECK,
205 W. 2nd STREET, DULUTH

THOMAS A. PEPPARD,
MEDICAL ARTS BLDG., MINNEAPOLIS

THE CLINICAL SYNDROME OF HYPERPARATHYROIDISM: David P. Barr, M.D., and Harold A. Bulger, M.D. (Amer. Jour. of Med. Sci., April, 1930, p. 449). The authors review the literature relating to the experimental results obtained by the injection of excessive amounts of parathormone. The essential characteristic is a rapidly developing hypercalcemia. Symptomatically there is restlessness, respiratory distress, vomiting, diarrhea, hematemesis, melena, collapse and death. There is usually hematuria, and in the fatal cases the kidneys cease to function about the time that the maximum value of hypercalcemia is obtained. During the terminal period, the phosphates and the non-protein nitrogen of the blood rise rapidly. They have collected from the literature and report in brief twenty-nine cases of parathyroid tumors. (These were summarized from the report of Hoffheinz.) In addition 74 examples of pathologically enlarged parathyroid glands included malignant and benign tumors as well as simple hyperplasia.

Conditions associated with enlargement of the parathyroid are nephritis, kidney stone, pituitary tumor, acromegaly, but most particularly diseases of the bones, and especially generalized osteitis fibrosa.

Of interest is the finding of metastatic calcification in the lungs, stomach, and kidneys.

Their own case reports, numbering five, include four female and one male, ages from 11 to 56. The first case is reported in great detail, and includes the operative removal of a parathyroid tumor. This surgical procedure caused a severe tetany, produced a hypocalcemia and a strongly positive calcium balance, and hyperphosphatemia. It prevented advance in the bone disease, and resulted in some subjective and objective improvement.

The second patient was also operated upon, and following operation the serum calcium fell below the normal level, and minor subjective symptoms of tetany developed. This patient was definitely improved.

The third patient died after some months.

(Autopsy and microscopic findings in cases four and

five.) The onset of the disease had occurred in childhood. The roentgen ray appearance of the bone was typical of osteitis fibrosa cystica. There was no evidence of hyperparathyroidism. The values for serum calcium were within normal limits.

Some others have found high values for blood calcium in the following conditions: abnormal ingestion of calcium, joint diseases, polycythemia, nephritis, multiple myeloma, carcinomatous metastases in bone, and osteitis fibrosa.

In summary: the symptoms of clinical hyperparathyroidism are similar to those produced by the experimental injection of excessive amounts of parathormone. They include:

1. Hypotonia.
2. Diminished electrical excitability of muscles.
3. Decalcification of bones.
4. Hypercalcemia.
5. Abnormal excretion of calcium in the urine.
6. Nephrolithiasis.
7. Hypophosphatemia.

Hypercalcemia is the most significant clinical sign. Determinations of calcium and phosphate content of the blood serum should be made in all cases of generalized bone disease, not only as a matter of interest, but because of their therapeutic indications.

T. A. PEPPARD, M.D.

ROENTGENOLOGY

SUPERVISORS

LEO G. RIGLER

UNIVERSITY HOSPITAL, MINNEAPOLIS

A. U. DESJARDINS

MAYO CLINIC, ROCHESTER

ROENTGEN STUDIES ON THE APPEARANCE OF SPINAL TUBERCULOSIS IN AN EARLY STAGE: M. Sgalitzer (Fort. a. d. Geb. d. Rönt., V. 40, p. 761., Nov., 1929). Sgalitzer presents, in a well illustrated article, a series of cases to demonstrate the factors in the roentgen diagnosis of early tuberculous spondylitis. The most important of his findings are:

1. Paravertebral abscess is present in two-thirds of the cases, may be recognized much earlier in the roentgenogram than clinically, and, when present, is almost pathognomonic of spinal tuberculosis.
2. Paravertebral abscess may be the only roentgen evidence of this condition. This may indicate either a very early tuberculosis or a very benign type.
3. The size of the abscess bears no relationship to the extent of the tuberculosis.
4. A change in the normal curve of the spine, such as the presence of kyphosis of the cervical or lumbar

vertebrae may be a very early sign of the disease.

5. We may occasionally see the tuberculous focus as a large or small area of destruction in the center of the vertebral body without any narrowing of the intervertebral disc.

6. Another type of case presents a slight narrowing of the anterior portions of a number of vertebral bodies with narrowing of the discs and possibly a large abscess.

7. Calcification may occur in the abscess and give distinct shadows.

8. Osteomyelitis may also give an abscess and presents the only difficulty in the roentgenologic differentiation. The history and other findings will usually rule it out.

9. There is a type of vertebral tuberculosis which is very benign and very chronic, and is often mistaken for "rheumatism." Many of these cases show large abscesses which serve to identify them even though no definite changes are visible in the vertebrae themselves.

LEO G. RIGLER, M.D.

FACTORS OF ERROR IN THE ROENTGENOLOGIC DIAGNOSIS OF DISEASES OF THE COLON: H. M. Weber, M.D. (Radiology, XIV, 5, May, 1930, p. 460). The accuracy of roentgenologic examination of diseases of the colon is very high. Thorough cleansing of the bowel is necessary for accurate diagnosis and to avoid errors due to apparent filling defects caused by fecal material, gas, and retained pockets of fluid in the colon. Palpation is done under roentgenoscopic control while the barium enema is being given. To assure complete filling of the cecum the enema should be permitted to pass through the ileocecal valve into the terminal ileum.

The filling defect or organic deformity of the luminal contours is by far the most common roentgenologic sign of colonic disease. Carcinoma, diverticulitis, tuberculosis, localized chronic ulcerative colitis, localized encroachment on the lumen of the bowel by extrinsic processes, organic inflammatory stricture and syphilis, named in the order of their frequency, manifest themselves by filling defects, constantly or occasionally. The filling defect of carcinoma is annular, polypoid or obstructing. Diverticulitis is generally found in the sigmoid colon and produces a spindle-shaped shadow with serrated contours and usually the extra-luminal pockets can be demonstrated. Both the attending spastic factor and the mural inflammatory infiltration combine to form the filling defect. Localized chronic ulcerative colitis resembles carcinoma and the differentiation is often difficult. Deformities due to extrinsic lesions may be caused by direct pressure on the colon or by spasticity due to inflammations in the immediate neighborhood. Organic stricture and syphilis of the colon are rare. Tuberculosis is generally found in the cecum and ascending colon and produces an irregular filling defect and a peculiar boggy consistence of the bowel. It is almost always associated with pulmonary tuberculosis.

Several films illustrate the conditions described.

JACOB SAGEL, M.D.

PEDIATRICS

SUPERVISORS:

CHESTER A. STEWART,
MEDICAL ARTS BLDG., MINNEAPOLIS

ROY N. ANDREWS,
MANKATO CLINIC, MANKATO

IDIOPATHIC ANEMIA OF THE NEW-BORN INFANT: Wm. Morris Happ, M.D., Los Angeles (Arch. of Ped., March, 1930, Vol. XLVII, No. 3). Pediatric literature contains very meager information concerning idiopathic anemia of the new-born infant. By this term is meant an anemia occurring during the first few days of life for which there is no satisfactory etiologic factor. Only six cases of anemia in new-born infants have been reported.

The infant is born at term, the birth is normal. Pallor may be noted at birth or during the first few days of life with gradual increase. This pallor is the only striking symptom and leads to an examination of the blood. This shows an actively regenerating anemia with marked reduction in red cells and hemoglobin. The white cells are usually increased in number, the differential count is normal; myelocytes may be present and platelets are normal. Active regeneration is evidenced by nucleated red cells, polychromatophilia and increase in reticulated cells. The spleen is usually slightly enlarged, but there is no general glandular enlargement.

In one case, where the fragility of the red cells was tested, this was found increased. The cases which have not been treated have recovered during the first year. Those treated by blood transfusion have recovered more quickly.

The etiology is obscure. There is no conclusive evidence of a hemolytic nature of these anemias. They regenerate rapidly. Blood transfusion seems to offer a definite stimulus to hematopoietic activity. It is recommended as the treatment of choice, together with the administration of iron, in the form of inorganic iron, in broths and liver.

R. N. ANDREWS, M.D.

THE USE OF GELATIN AS A SUPPLEMENTARY FOOD IN THE INFANT'S DIETARY: Theo. O. Elterich, M.D., D. H. Boyd, M.D., and Andrew Neff, Ph.D., Pittsburgh (Arch. of Ped., May, 1930, Vol. XLVII, No. 5). Ruehrar and Friedenwald state that only recently has the real value of gelatin in the diet been more widely known. It is very useful in rendering milk mixtures more digestible, preventing both gastric and intestinal indigestion by preventing the large, hard curds. It is of value in infants who regurgitate or vomit their food, in diarrhea, particularly where there is putrefaction. It is useful where gas is formed, either in the stomach or the intestines, and in fermentative conditions in general. It is useful in preventing colic in some babies, and in the breast-fed may be given

in solution just before feeding. In infants who are constipated and who have large, hard stools which do not adhere to the napkin, the addition of gelatin to the formula usually corrects the difficulty. It is of great value in celiac disease, not only in supplying additional much-needed food, but in correcting the accompanying indigestion. In malnutrition the addition of gelatin to the dietary is of great value, as it is in those who have lost weight through operations, fevers, or other illnesses.

Large amounts of gelatin may be administered to very small infants over fairly long periods of time without any apparent unfavorable consequences.

Contrary to previously reported studies, gelatin does not accelerate growth out of proportion to calories ingested. Gelatin acts like protein matter and gain in weight is in proportion to protein-carbohydrate ratio.

Our feeling would be that gelatin addition to formula produces results similar to those found when protein milk is added to formula, but it must be remembered that gelatin is an incomplete protein. On the other hand, the addition of gelatin to a formula of an older infant is less likely to be distasteful than would be the case with high acid formulae.

One hundred calories of gelatin (four level tablespoonfuls of powdered gelatin) may be added to the day's formula without increasing the volume. This is an advantageous factor in cases where infants have a tendency to vomit, in cases where high cereal formulae are necessary, or in cases where it is difficult to get infants to ingest normal quantities of food.

Gelatin may be a food factor in certain unusual allergic infants, where the ingestion of either breast or cow's milk cannot be tolerated.

R. N. ANDREWS, M.D.

CONSULTATION BUREAU

(Continued from Page 510)

start as a rule with so much pain. Was there any history of excessive exposure to the sun? Spontaneous subarachnoid hemorrhage should be considered. As a general rule spinal puncture reveals the nature of this disease. The fluid is either bloody or tinged a yellowish color. If you had done a Queckenstad test, that is, pressure on the jugulars with a spinal needle in position, you might have found a block which would explain the absence of bloody fluid. As a general rule this disease occurs in young people and has a fairly favorable prognosis. There is diffuse hemorrhage over the surface of the brain of probable unknown origin. Was there any history of trauma or drugs? Brain tumor should also be considered. In spite of the negative fundi, it would be advisable to do an estimation of the visual fields. It may be done without much difficulty, and in spite of the fact that the patient is now feeling better I would advise you to examine him again for any disturbance in his fields. This is especially valuable in tumors of the pituitary gland and may also be of diagnostic value in temporal and occipital tumors. As a last resort and after prolonged observation, a probable psychic origin for the headaches should be considered. It would be advisable for you to check the patient at frequent intervals with a thorough neurological examination and not to let him go because no definite diagnosis can be made.

BOOK REVIEWS

Books listed here become the property of the Ramsey and Hennepin County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

BOOKS RECEIVED FOR REVIEW

OBSTETRICS FOR NURSES. Charles B. Reed, M.D., F.A.C.S., Professor of Obstetrics, Northwestern University Medical School, Chief Obstetrician Wesley Memorial Hospital, Chicago, and Charlotte L. Gregory, R.N., B.S., M.D., Adjunct in Obstetrics Wesley Memorial Hospital, Clinical Assistant in Obstetrics Northwestern University Medical School, Chicago. 399 pages. Illus. Cloth \$3.00. St. Louis: C. V. Mosby Company, 1930.

MINOR SURGERY. Arthur E. Hertzler, M.D., Chief Surgeon, Halstead Hospital, and Victor E. Chesky, M.D., Chief Resident Surgeon, Halstead Hospital, Halstead, Kansas. Second Edition. 602 pages. Illus. Cloth \$10.00. St. Louis: C. V. Mosby Company, 1930.

PHYSIOLOGY AND BIOCHEMISTRY IN MODERN MEDICINE. J. J. R. Macleod, M.B., LL.D., D.Sc., F.R.S., Regius Professor of Physiology in the University of Aberdeen, Scotland; formerly Professor of Physiology in the University of Toronto, Canada, and in the Western Reserve University, Cleveland, Ohio. Sixth Edition. 1074 pages. Illus. Cloth \$11.00. St. Louis: C. V. Mosby Company, 1930.

CERTIFIED MILK. Proceedings of the American Association of Medical Milk Commissions, Inc. 350 pages. Illus. Cloth. Brooklyn, N. Y.: American Association of Medical Milk Commissions, Inc.

ALIMENTARY ANAPHYLAXIS. Guy Laroche, Charles Richet Fils and Francois Saint-Girons, of Paris, France. Translated by Mildred P. Rowe and Albert H. Rowe. 139 pages. Cloth \$2.00. Berkeley, Calif.: University of California Press.

CLINICAL FEATURES OF HEART DISEASE. Leroy Crummer, M.D., Emeritus Professor of Medicine, University of Nebraska. Introduction by Emanuel Libman, M.D., Professor of Clinical Medicine, Columbia University. Second Edition. 415 pages. Cloth \$4.00. New York: Paul B. Hoeber, Inc.

ALLERGIC DISEASES—Their Diagnosis and Treatment. Ray M. Balyeat, M.A., M.D., F.A.C.P. Lecturer on Allergic Diseases in the University of Oklahoma Medical School; Consulting Physician to St. Anthony's Hospital and to State University Hospital, etc. 395 pages. Illus. Cloth, \$5.00. Philadelphia: F. A. Davis Company, 1930.

MERCK'S INDEX. An encyclopedia for the chemist, pharmacist and physician. Fourth Edition. 585 pages. Rahway, N. J.: Merck & Co., Inc.

UTERINE TUMORS. Charles C. Norris, M.D., Professor of Gynecology and Obstetrics, University of Pennsylvania. Limp leather. Price, \$3.00. 251 pages

with 14 illustrations. New York: Harper & Brothers, 1930.

This small volume is one of a series of medical monographs published, and in preparation by Harpers.

The author stresses the importance of the uterus as a site for neoplasms whose course and share in the increasing cancer mortality may be definitely effected for the better by early diagnosis and careful treatment. The work is largely based upon material from the laboratory of the Hospital of the University of Pennsylvania, and this, coordinated with treatment and follow-up records, is the basis for the author's recommendations.

The Clark test for carcinoma of the fundus is stressed as a simple means for early diagnosis of that condition. "It is of great practical value, and although it lacks the accuracy obtained by curettage, it possesses the following advantages: it may be employed in the physician's office; it requires no special skill or histologic knowledge, or extensive armamentarium; it involves no loss of time." In this test a sound is inserted into the fundus; if a friable, vascular growth is encountered, withdrawal of the sound will be followed by a trickle of bright blood from the cervix.

There is a careful evaluation of results obtained by the use of surgery, radium, and x-ray treatments.

The book has seven chapters as follows: Cervical Polyps, Carcinoma and Other Malignant Tumors of the Cervix, Carcinoma of the Body of the Uterus, Myoma Uteri, Sarcoma and Allied Tumors of the Body of the Uterus, and Tumors of the Chorion.

E. C. HARTLEY, M.D.

INFANT NUTRITION. William McKim Marriott, B.S., M.D., Professor of Pediatrics, Washington University School of Medicine; Physician in Chief, St. Louis Children's Hospital, St. Louis. 375 pages. Illus. Cloth, \$5.50. St. Louis: C. V. Mosby Company, 1930.

Very few outstanding pediatricians are able to resist the urge to write a book on advice to mothers, or a volume on infant feeding. Thus it was to be expected that W. McKim Marriott of St. Louis would produce a text of this type. His extensive training in physiology has manifested itself in the very excellent chapter on anhydremia, acidosis and alkalosis. Otherwise it resembles closely the stereotyped book of its kind. It does, however, include many of the newer ideas in infant feeding, and omits repetition of obsolete theories and methods. The author's ambition to simplify the subject of infant feeding does not seem entirely realized, although in this respect he has achieved no less than his predecessors.

The writer demonstrates the tendency in pediatrics toward ample feeding, as opposed to the underfeeding so commonly practiced in the past. Thus, he advocates giving infants both breasts every four hours, instead of one breast at a feeding, as is so commonly advised; also, that infants require 2.5 to 3 ounces of breast milk per pound of body weight daily—a more generous allotment than formerly. He states similarly

that the caloric requirement of a normal infant is 115 calories per kilo. He stresses the necessity for feeding an undernourished infant on a basis of what it should weigh rather than on its actual weight. His suggestion that pasteurized milk is usually as satisfactory as certified milk, but that all milk for infant feeding should be boiled regardless, is in harmony with present day thought. Marriott's preference for codliver oil over viosterol in the prevention and treatment of rickets is soundly founded. Caution against the use of cathartics in treatment of diarrhea is justly emphasized.

The author's belief that hidden otitis media and symptomless mastoiditis are commonly responsible for alimentary intoxication, and the advocacy of mastoidectomy in such cases, is still a subject for loud con-

troversy among pediatricians, as well as otologists. One hesitates in accepting such radical advice.

The author's original suggestion of using insulin in anorexia of infancy and childhood is not mentioned in this volume; in fact the entire subject of anorexia is disregarded. The medical student and general practitioner, for whom this book was intended, will find it lacking in explicit information regarding the feeding of normal infants with milk mixtures, as well as in detailed advice concerning the administration of solid foods during the first year of life. In these respects it resembles many similar texts on infant feeding. The man who does not possess such a book will, however, find this volume generally very satisfactory.

THOMAS MYERS, M.D.

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Apply Abbott Hospital and Janney Children's Hospital, 17th to 18th Streets, on First Avenue South, Minneapolis.

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WANTED—An assistant in general practice, one whose inclination is decidedly toward internal medicine, in town located near Twin Cities, good hospital and office facilities. Address D-85, care MINNESOTA MEDICINE.

WANTED—Physician for locum tenens for about two months. General practice in city of 20,000. Minnesota license necessary. Open now. Address D-80, care MINNESOTA MEDICINE.

POSITION WANTED—Experienced laboratory technician wishes position in doctor's office or hospital. Can also do stenographic work. Address D-81, care MINNESOTA MEDICINE.

FOR SALE—General practice in thriving German town in central North Dakota. Price very reasonable. Population of town 750. Address D-82, care MINNESOTA MEDICINE.

LOCUM TENENS WANTED—Physician, age 28, available for summer or any part of it. Grade A medical school. General internship, Ancker Hospital, Saint Paul. Address D-88, care MINNESOTA MEDICINE.

POSITION WANTED—Experienced married clinical pathologist wants connection in Minnesota. B.S. degree. Ten years' experience. Address D-89, care MINNESOTA MEDICINE.

WANTED—Locum Tenens or assistantship by experienced physician, licensed in Minnesota. Address D-90, care MINNESOTA MEDICINE.